FIG. 1

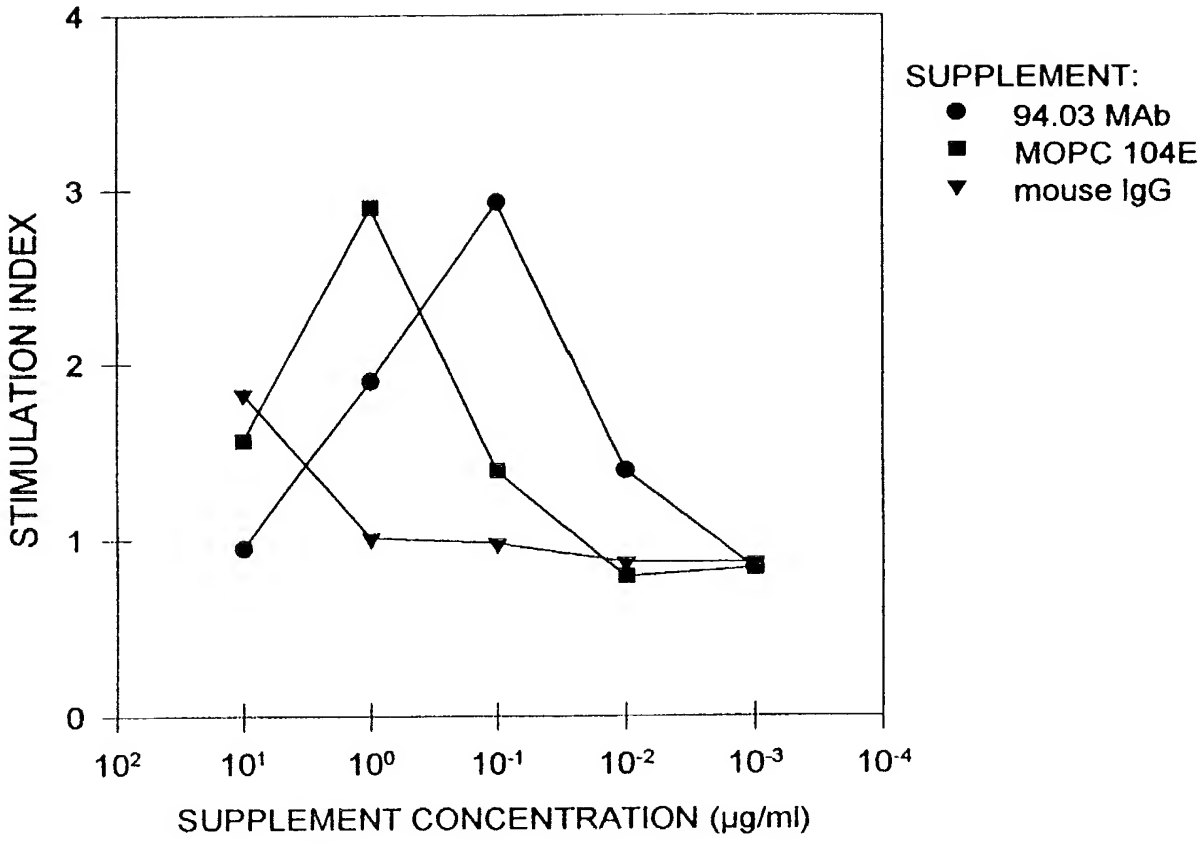


FIG. 2

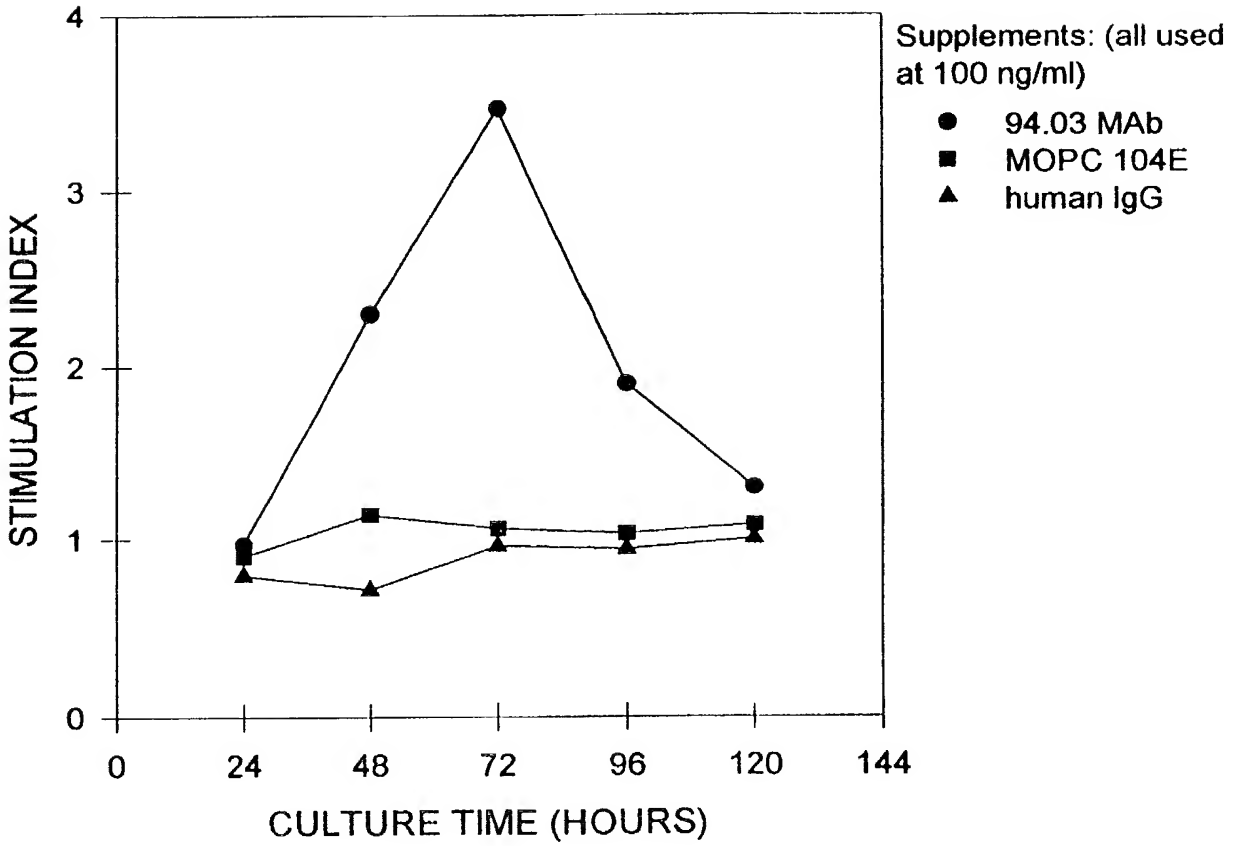


FIG. 3A

FIG. 3B

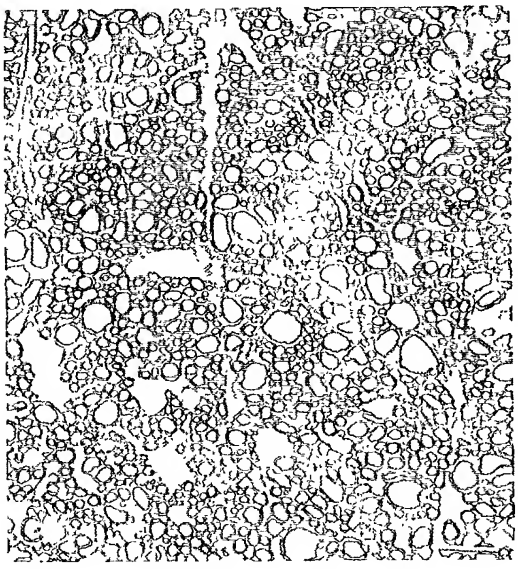


FIG. 3C

FIG. 3D

FIG. 5

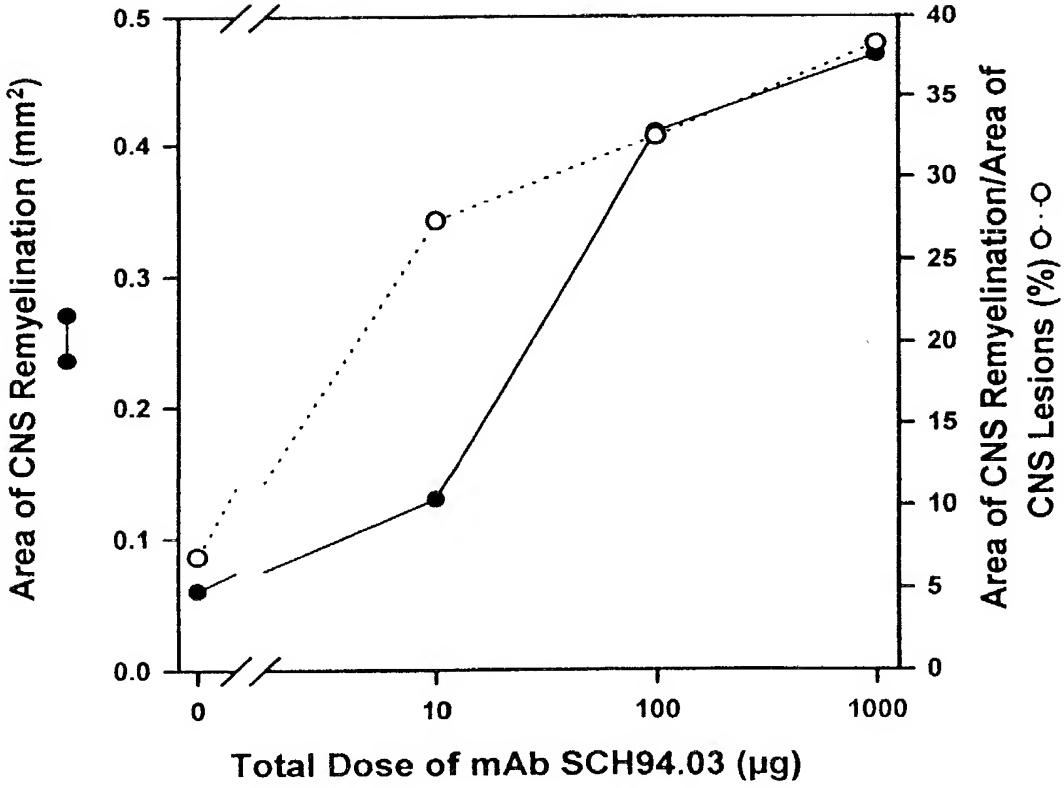


FIG. 6

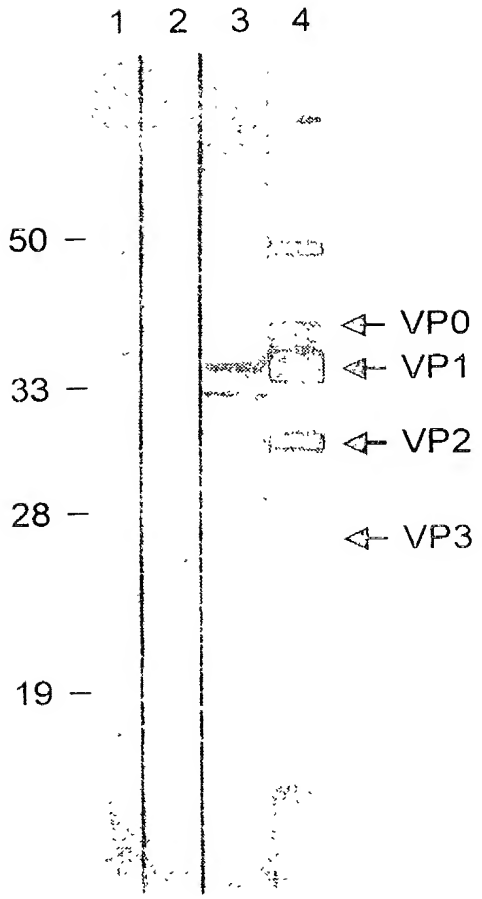


FIG. 7A

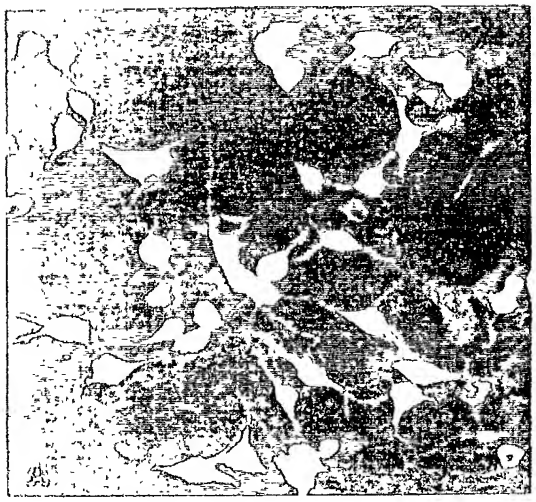
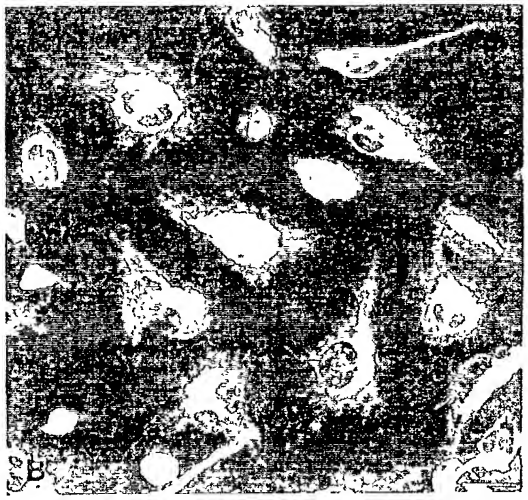


FIG. 7B



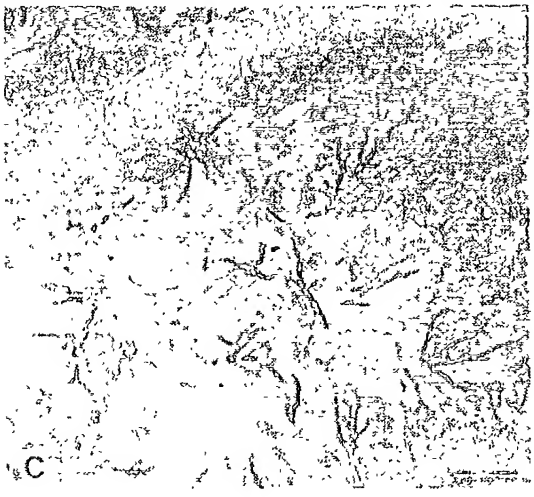


FIG. 7C

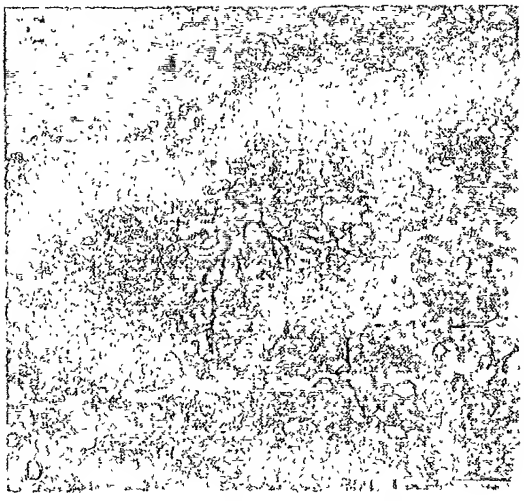


FIG. 7D

FIG. 8A

FIG. 8B

FIG. 8C

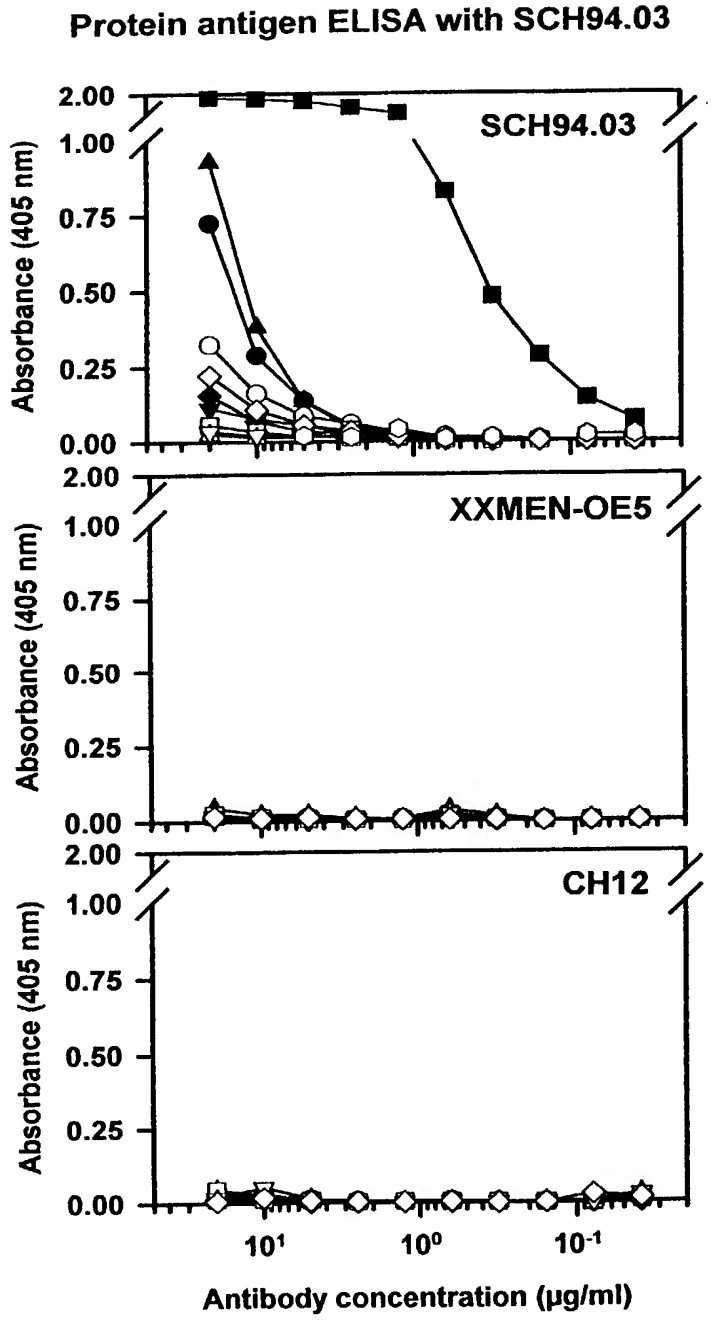
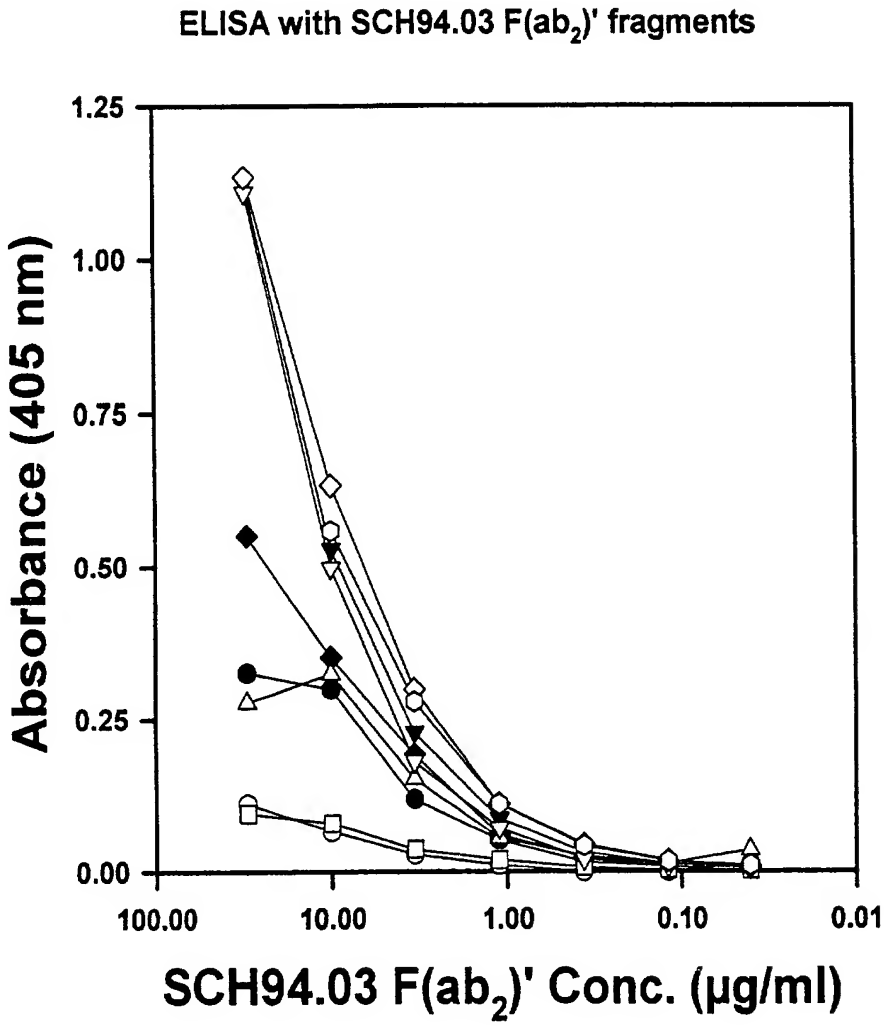


FIG. 9



Antigen:

- ● Bovine thyroglobulin
- ▼ Human spectrin
- ◆ Bovine tubulin
- ○ Bovine myelin basic protein
- □ Bovine myosin
- △ Dog myoglobin
- ▽ Trinitrophenyl (TNP)-BSA
- ◇ Rabbit actin
- ⬡ Mouse hemoglobin

FIG. 10A

FIG. 10B

FIG. 10C

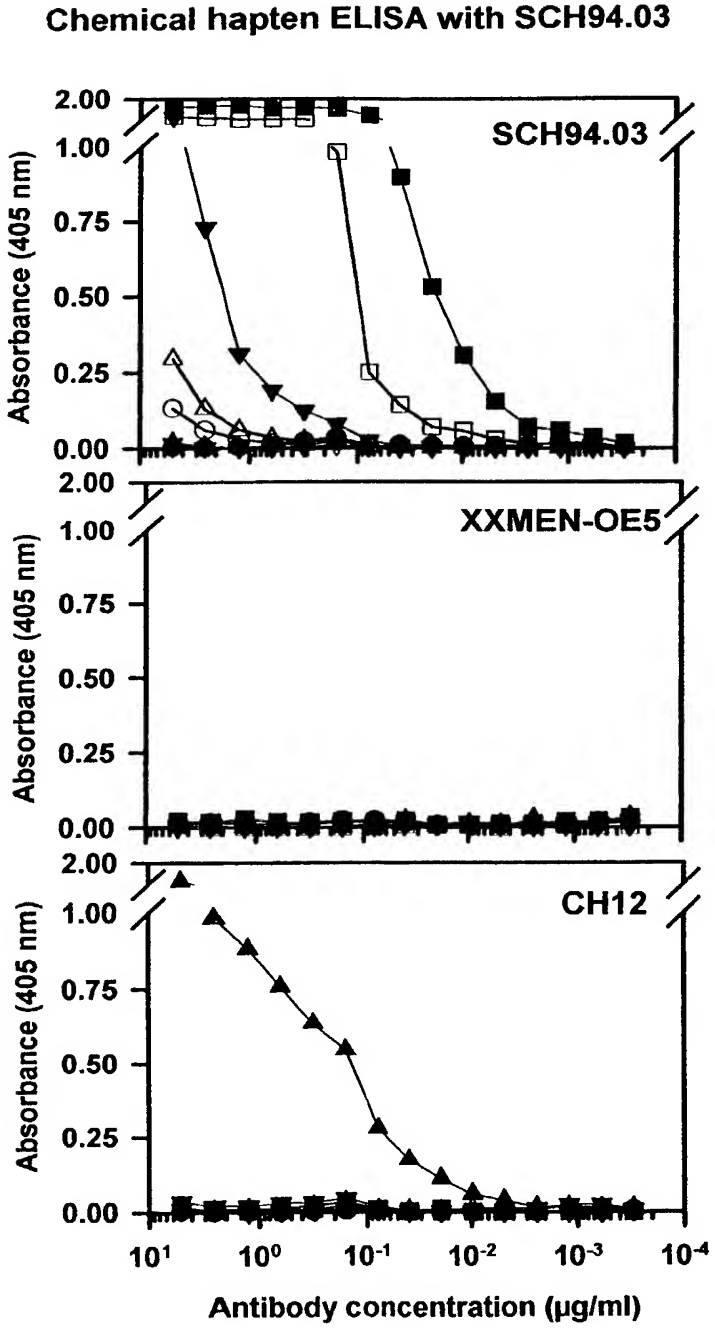


FIG. 11A Immunoglobulin Light Chain Variable Region Sequence of SCH94.03

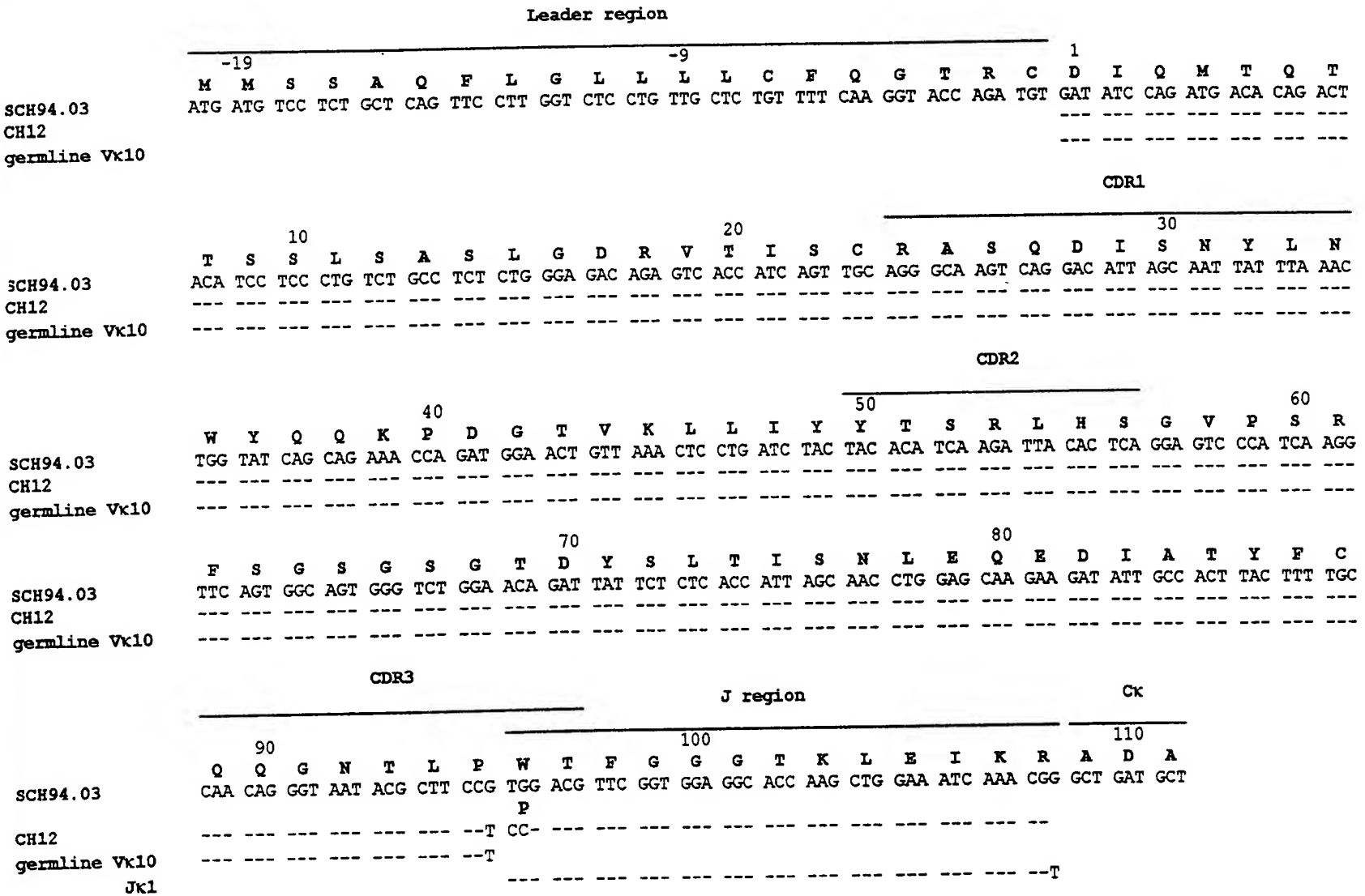


FIG. 11B

Immunoglobulin Heavy Chain Variable Region Sequence of SCH94.03

Leader region

	-19									-9									1								
	M	G	W	S	C	I	I	L	F	L	V	A	A	A	T	G	V	H	S	Q	V	Q	L	Q	Q	P	G
SCH94.03	ATG	GGA	TGG	AGC	TGT	ATC	ATC	CTC	TTT	TTG	GTA	GCA	GCA	GCT	ACA	GGT	GTC	CAC	TCC	CAG	GTC	CAA	CTG	CAG	CAG	CCT	GGG
CH12																				---	---	---	---	---	---	---	---
germline V23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR1

		10										20										30					
	T	E	L	V	K	P	G	A	S	V	K	L	S	C	K	A	S	G	Y	T	F	T	S	Y	W	M	H
SCH94.03	ACT	GAA	CTG	GTG	AAG	CCT	GGG	GCT	TCA	GTG	AAG	CTG	TCC	TGC	AAG	GCT	TCT	GGC	TAC	ACC	TTC	ACC	AGC	TAC	TGG	ATG	CAC
CH12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
jermline V23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR2

					40										50		52A								60		
	W	V	K	Q	R	P	G	Q	G	L	E	W	I	G	N	I	N	P	S	N	G	G	T	N	Y	N	E
SCH94.03	TGG	GTG	AAG	CAG	AGG	CCT	GGA	CAA	GGC	CTT	GAG	TGG	ATT	GGA	AAT	ATT	AAT	CCT	AGC	AAT	GGT	GGT	ACT	AAC	TAC	AAT	GAG
CH12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
germline V23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR2

									70									80			82A	82B	82C			
	K	F	K	S	K	A	T	L	T	V	D	K	S	S	S	T	A	Y	M	Q	L	S	S	L	T	S	E
SCH94.03	AAG	TTC	AAG	AGC	AAG	GCC	ACA	CTG	ACT	GTA	GAC	AAA	TCC	TCC	AGC	ACA	GCC	TAC	ATG	CAG	CTC	AGC	AGC	CTG	ACA	TCT	GAG
CH12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
germline V23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR3

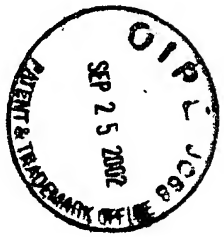
N region | D region | N region | J region

					90										100	100A	100B					100C	100D				
	D	S	A	V	Y	Y	C	A	R	R	A		P	Y	Y	G	S	R				N	F	D	Y	W	G
SCH94.03	GAC	TCT	GCG	GTC	TAT	TAT	TGT	GCA	AGA	CGG	GCC	CC	..T	TAC	TAC	GGT	AGT	AGG	...	...	...	AAC	TTT	GAC	TAC	TGG	GGC
													D					S	W	G	Y	Y					
CH12	---	---	---	---	---	---	---	---	---	...	...	..	GA-	---	---	---	---	--C	TGG	GGG	TAC	T--	---	---	---	---	---
germline V23	---	---	---	---	---	---	---	---	---													T--	---	---	---	---	---
J_H2																											

J region | Cμ

						110					
	Q	G	T	T	L	T	V	S	S	E	S	Q
SCH94.03	CAA	GGC	ACC	ACT	CTC	ACA	GTC	TCC	TCA	GAG	AGT	CAG
CH12	---	---	---	---	---	---	---	---	---			
germline J_H2	---	---	---	---	---	---	---	---	---			

FIG. 12


SEP 25 2002
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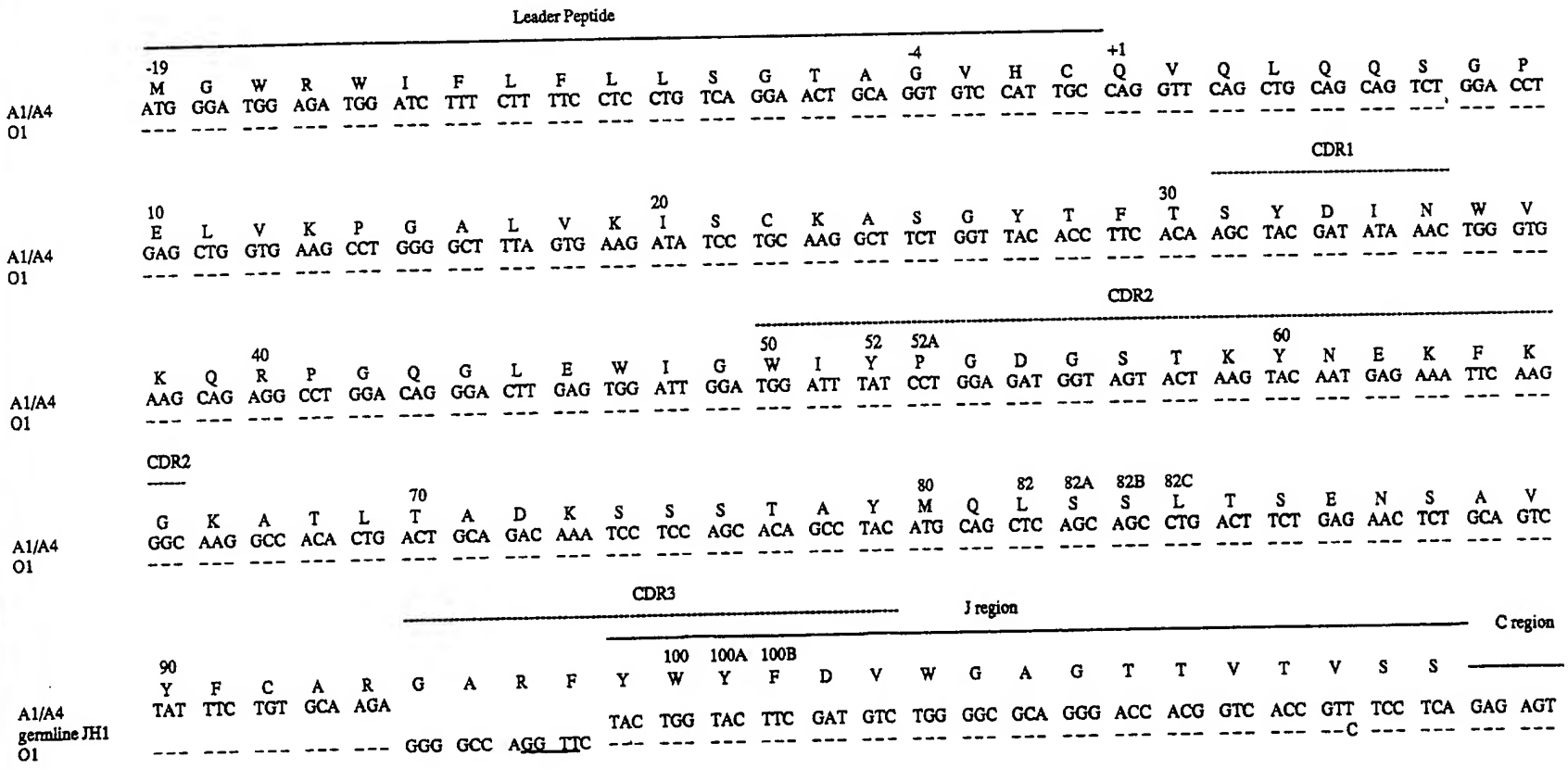
Leader Peptide
CDR1
CDR2
CDR2
CDR3
J region
C region
A1/A4 O1
A1/A4 O1
A1/A4 O1
A1/A4 O1
A1/A4 germline JH1 O1

FIG. 13


PATENT & TRADEMARK OFFICE
SEP 25 2002

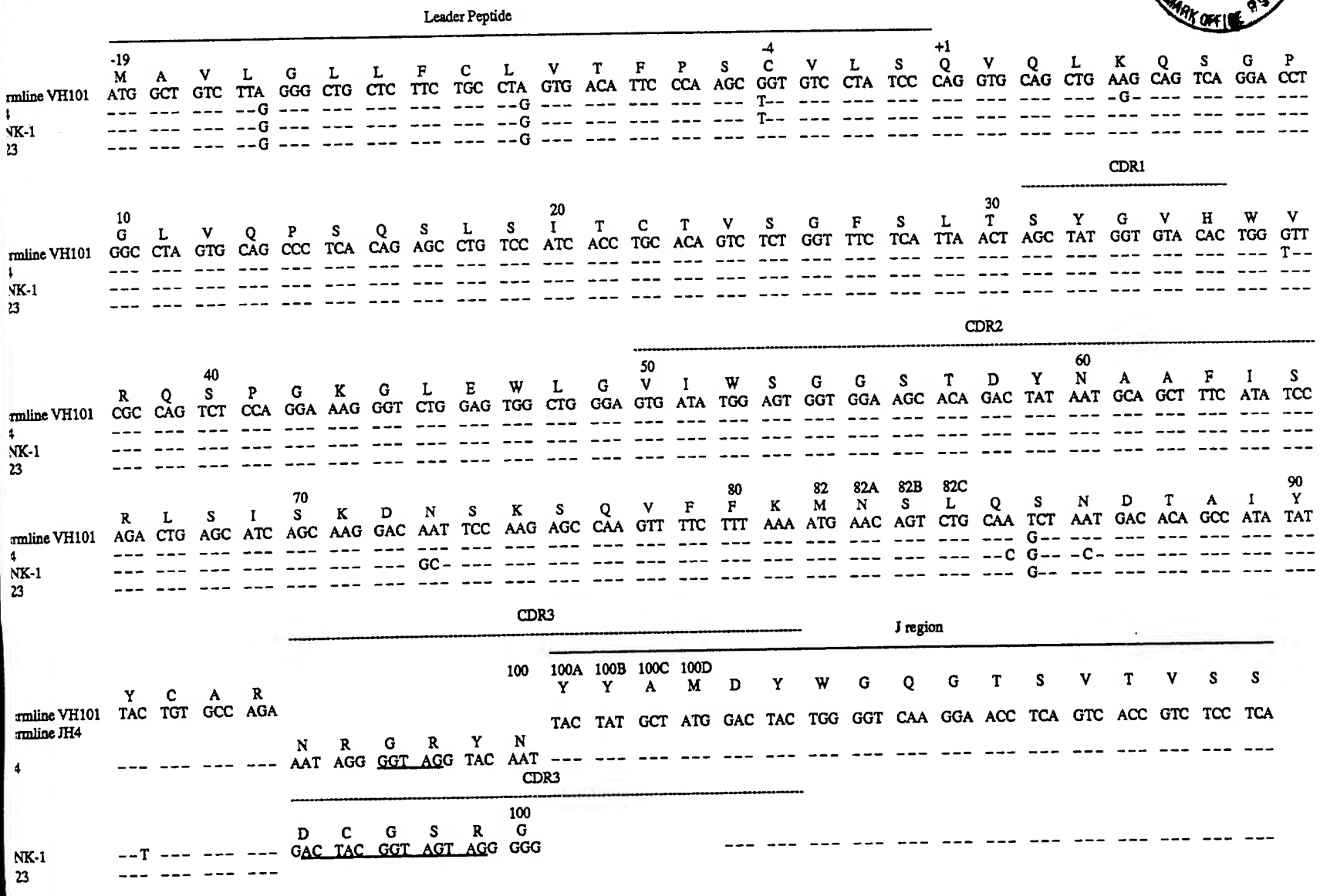
Leader Peptide
CDR1
CDR2
CDR3
J region
rmline VH101
rmline JH4
NK-1

FIG. 14

Leader Peptide

	-19															-4				+1									
	M	K	L	W	L	N	W	V	F	L	L	T	L	L	H	G	I	Q	C	E	V	K	L	V	E	S	G	G
germline V1	ATG	AAG	TTG	TGG	TTA	AAC	TGG	GTT	TTT	CTT	TTA	ACA	CTT	TTA	CAT	GGT	ATC	CAG	TGT	GAG	GTG	AAG	CTG	GTG	GAA	TCT	GGA	GGA
A2B5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	---

CDR1

	10										20									30								
	G	L	V	Q	P	G	G	S	L	R	L	S	C	A	T	S	G	F	T	F	S	D	F	Y	M	E	W	V
germline V1	GGC	TTG	GTA	CAG	CCT	GGG	GGT	TCT	CTG	AGA	CTC	TCC	TGT	GCA	ACT	TCT	GGG	TTC	ACC	TTC	AGT	GAT	TTC	TAC	ATG	GAG	TGG	GTC
A2B5	---	C--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR2

			40										50		52	52A	52B	52C				60					
	R	Q	P	P	G	K	R	L	E	W	I	A	A	S	R	N	K	A	N	D	Y	T	T	E	Y	S	A	S
germline V1	CGC	CAG	CCT	CCA	GGG	AAG	AGA	CTG	GAG	TGG	ATT	GCT	GCA	AGT	AGA	AAC	AAA	GCT	AAT	GAT	TAT	ACA	ACA	GAG	TAC	AGT	GCA	TCT
A2B5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--G	---	---	---	---	---	-A-	---	---	---	---	---	---

CDR2

								70										80		82	82A	82B	82C					
	V	K	G	R	F	I	V	S	R	D	T	S	Q	S	I	L	Y	L	Q	M	N	A	L	R	A	E	D	T
germline V1	GTG	AAG	GGT	CGG	TTC	ATC	GTC	TCC	AGA	GAC	ACT	TCC	CAA	AGC	ATC	CTC	TAC	CTT	CAG	ATG	AAT	GCC	CTG	AGA	GCT	GAG	GAC	ACT
A2B5	---	---	--G	---	---	-C-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-A-	---	---	---

CDR3

J region

			90										100	100A	100B			100C										
	A	I	Y	Y	C	A	R	D	A	R	Q	L	G	L	P	A	W	F	A	Y	W	G	Q	G	T	L	V	T
germline V1	GCC	ATT	TAT	TAC	TGT	GCA	AGA	GAT	GCA	C						GCC	TGG	TTT	GCT	TAC	TGG	GGC	CAA	GGG	ACT	CTG	GTC	ACT
germline JH3																												
A2B5	---	---	---	---	---	---	---	GAT	GCA	CGG	CAG	CTC	GGG	CTC	CCG			---	---	---	---	---	---	---	---	---	---	---

J region

	V	S	A
germline JH3	GTC	TCT	GCA
A2B5	---	---	---

FIG. 15


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JC68

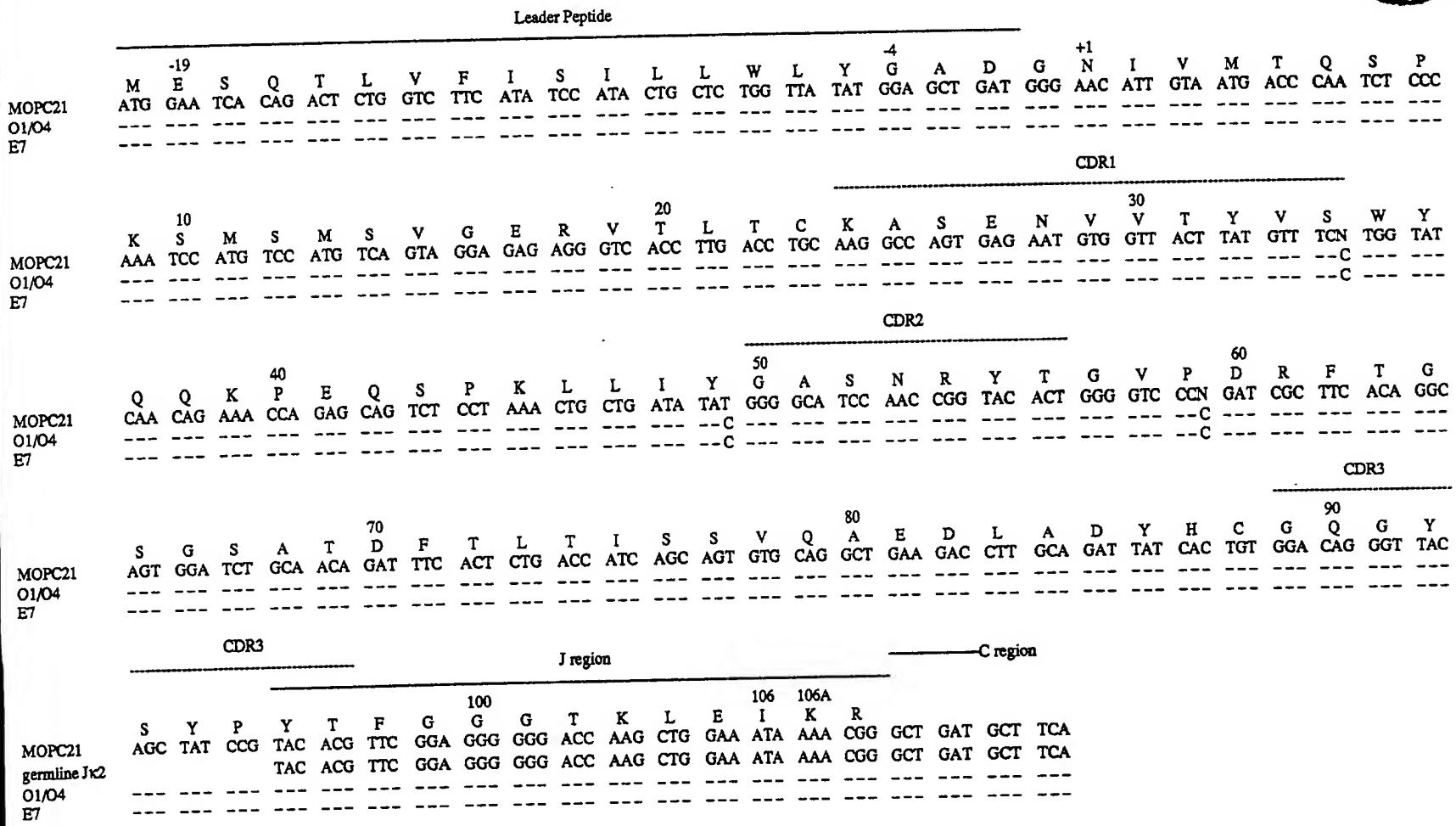

Leader Peptide
CDR1
CDR2
CDR3
CDR3
J region
C region
MOPC21
germline Jκ2
O1/O4
E7

FIG. 16

Leader Peptide

	M	D	M	R	A	P	A	Q	I	F	G	F	L	L	L	L	F	Q	-4 G	T	R	C	+1 D	I	Q	M	T	Q
rmline Vκ41	ATG	GAC	ATG	AGG	GCT	CCT	GCA	CAG	ATT	TTT	GGC	TTC	TTG	TTG	CTC	TTG	TTT	CAA	GGT	ACC	AGA	TGT	GAC	ATC	CAG	ATG	ACC	CAG
NK-1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
OPC41	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR1

	S	P	S	10 S	L	S	A	S	L	G	E	R	V	20 S	L	T	C	R	A	S	Q	D	I	30 G	S	S	L	N
rmline Vκ41	TCT	CCA	TCC	TCC	TTA	TCT	GCC	TCT	CTG	GGA	GAA	AGA	GTC	AGT	CTC	ACT	TGT	CGG	GCA	AGT	CAG	GAC	ATT	GGT	AGT	AGC	TTA	AAC
NK-1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
OPC41	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR2

	W	L	Q	Q	E	40 P	D	G	T	I	K	R	L	I	Y	50 A	T	S	S	L	D	S	G	V	P	60 K	R	F
rmline Vκ41	TGG	CTT	CAG	CAG	GAA	CCA	GAT	GGA	ACT	ATT	AAA	CGC	CTG	ATC	TAC	GCC	ACA	TCC	AGT	TTA	GAT	TCT	GGT	GTC	CCC	AAA	AGG	TTC
NK-1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--G	---	---	---	---
OPC41	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--G	---	---	---	---

CDR3

	S	G	S	R	S	G	S	70 D	Y	S	L	T	I	S	S	L	E	80 S	E	D	F	V	D	Y	Y	C	L	90 Q
rmline Vκ41	AGT	GGC	AGT	AGG	TCT	GGG	TCA	GAT	TAT	TCT	CTC	ACC	ATC	AGC	AGC	CTT	GAG	TCT	GAA	GAT	TTT	GTA	GAC	TAT	TAC	TGT	CTA	CAA
NK-1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
OPC41	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR3 — J region — C region

	Y	A	S	S	P	Y	T	F	G	100 G	G	T	K	L	E	106 I	106A K	R
rmline Vκ41	TAT	GCT	AGT	TCT	CCT													
rmline Jκ2						TAC	ACG	TTC	GGA	GGG	GGG	ACC	AAG	CTG	GAA	ATA	AAA	CGG	GCT	GAT	GCT	TCA
NK-1	---	---	---	---	--G	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
OPC41	---	---	---	---	--G																	

FIG. 17

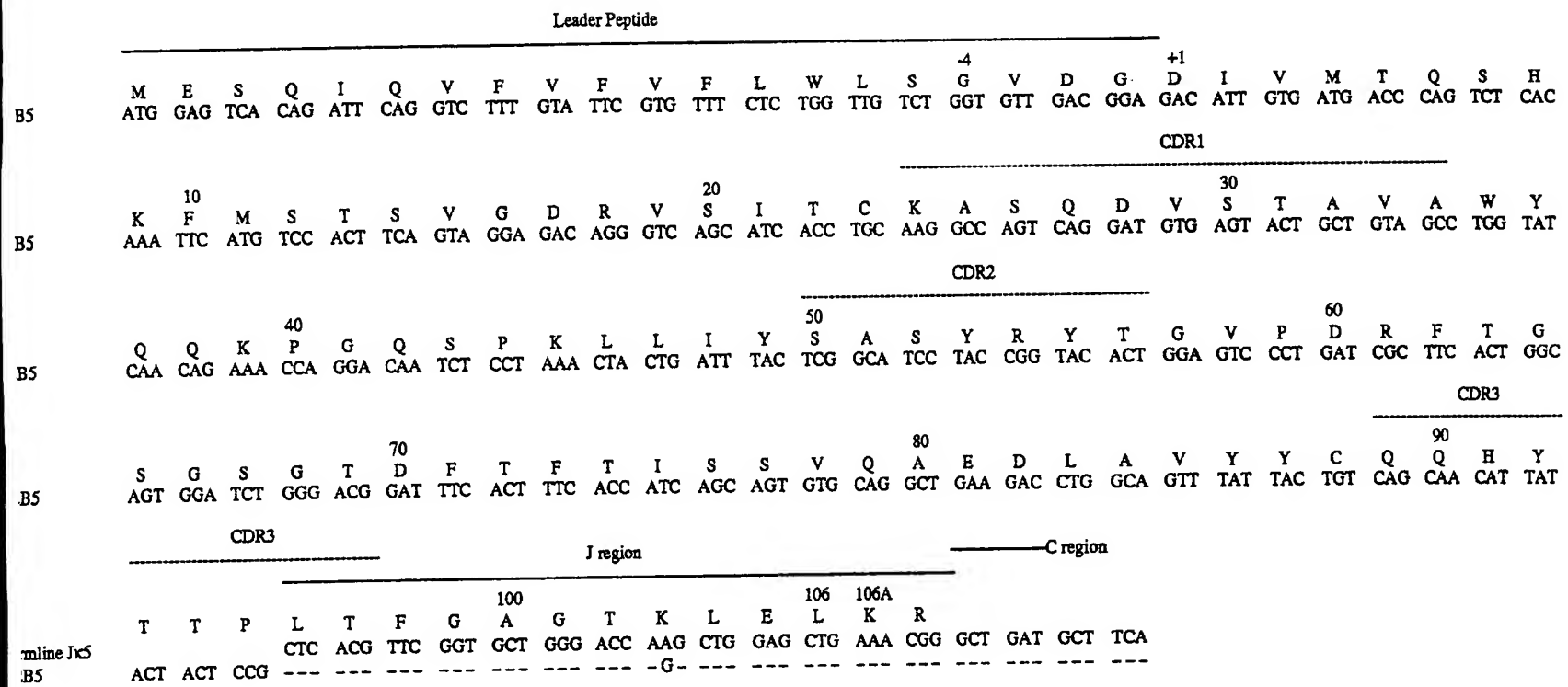


FIG. 18

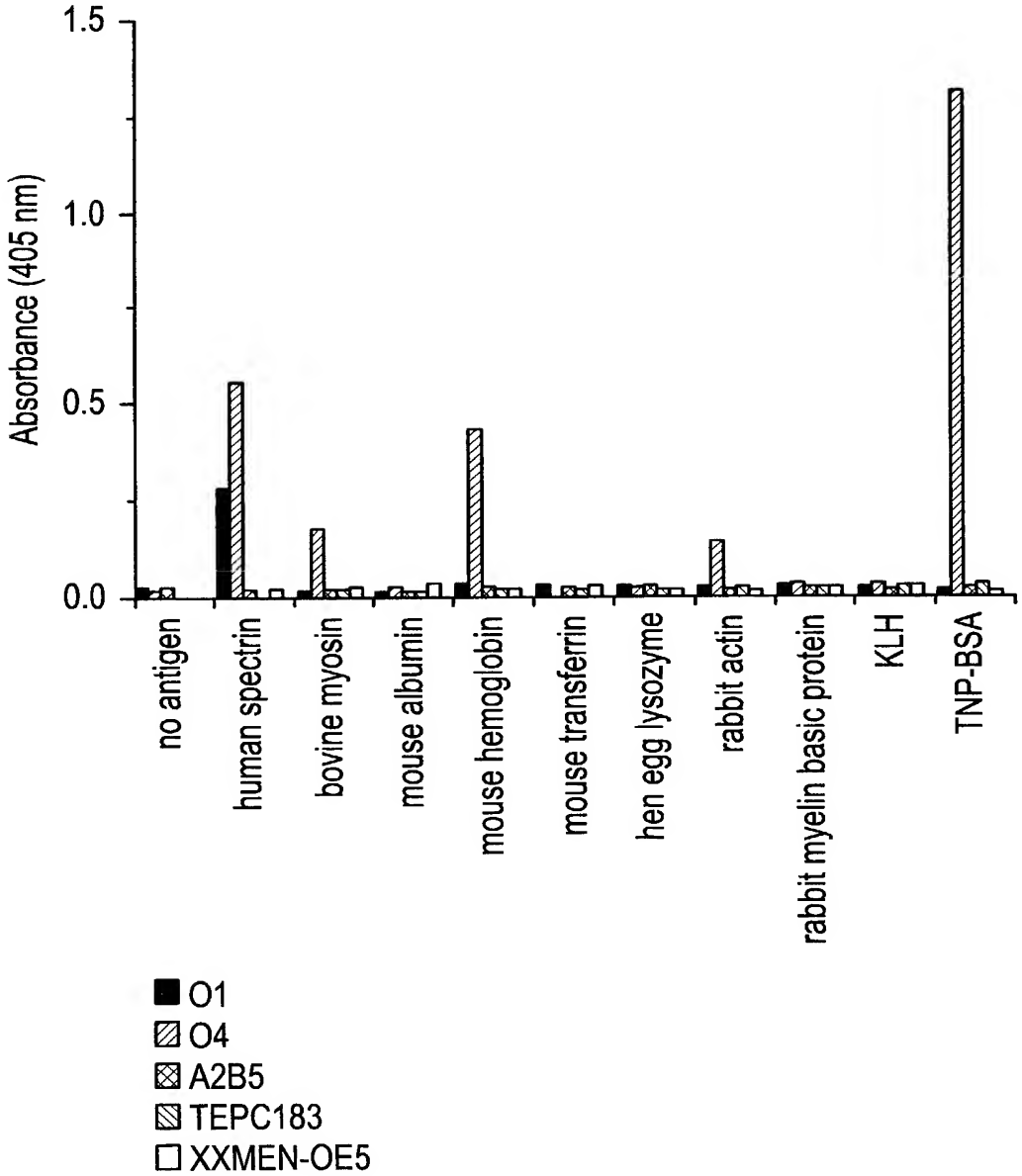


FIG. 19A

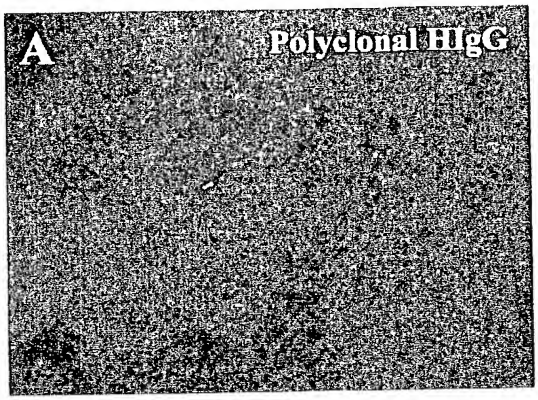


FIG. 19B

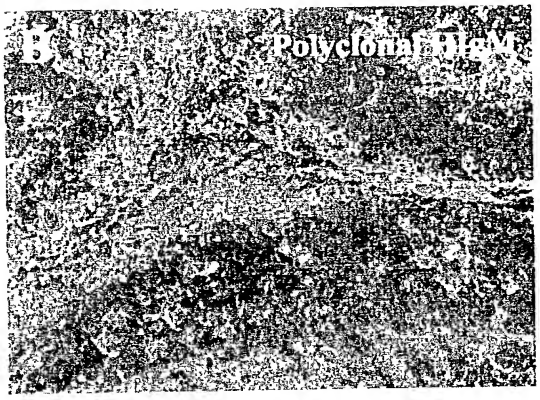


FIG. 19C

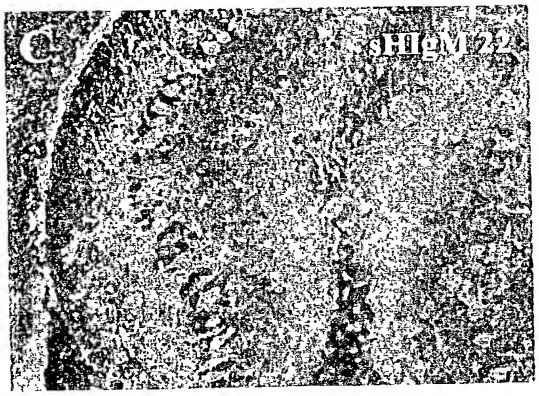


FIG. 19D

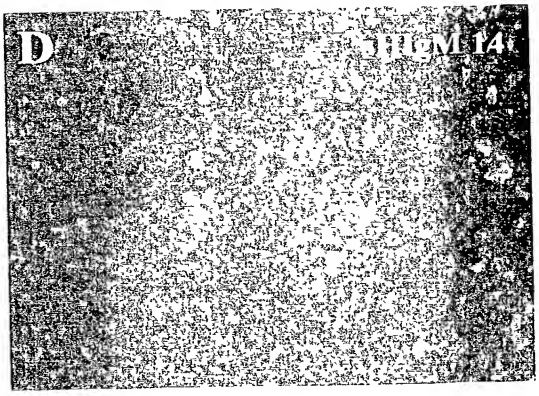


FIG. 19E

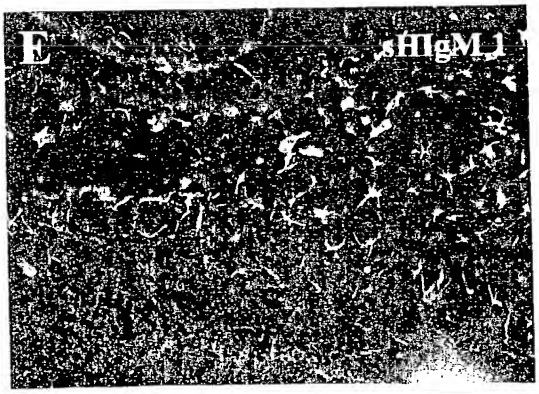


FIG. 19F

FIG. 20A

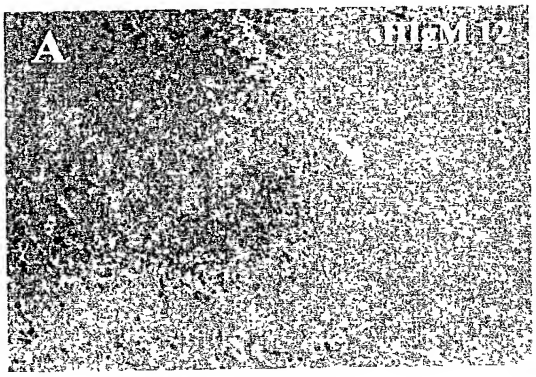


FIG. 20B

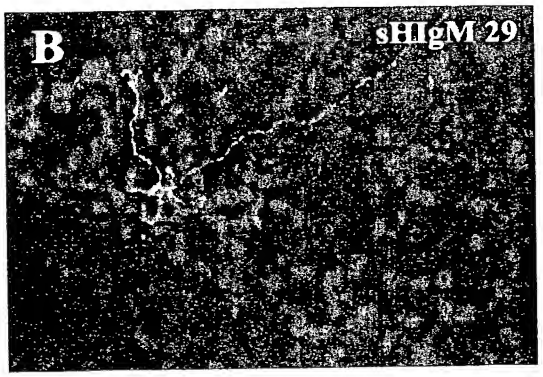


FIG. 20C

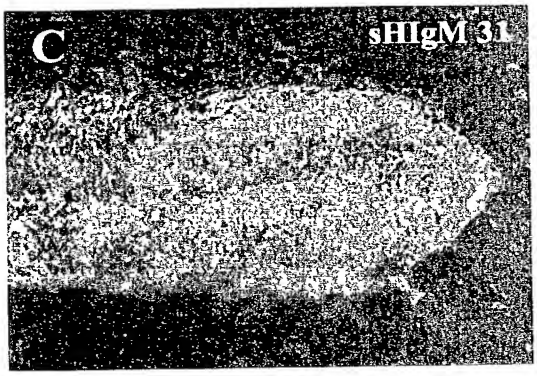


FIG. 20D

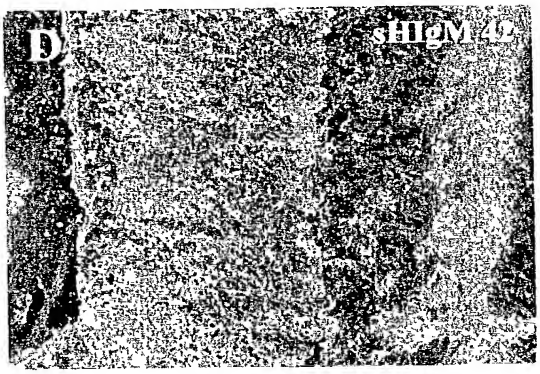


FIG. 20E

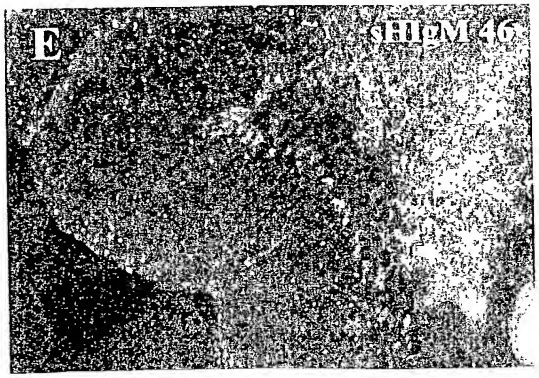


FIG. 20F

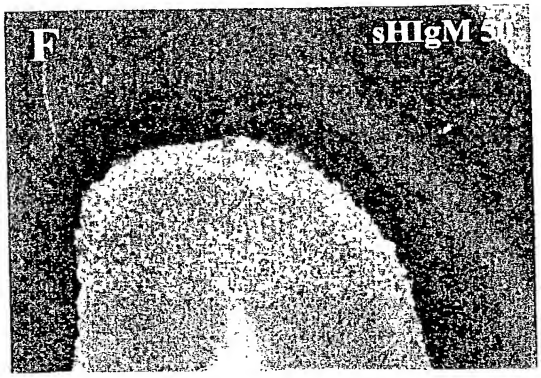


FIG. 21A

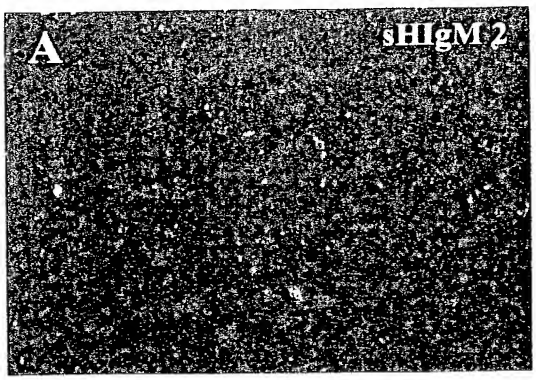


FIG. 21B

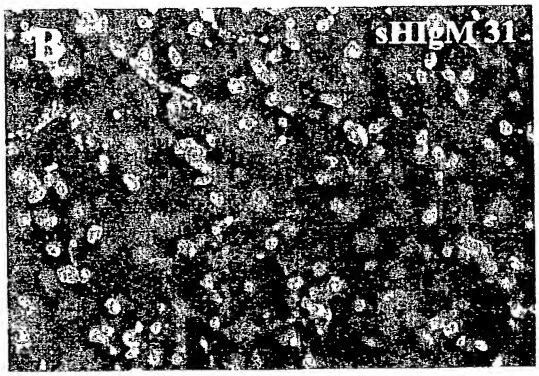


FIG. 21C

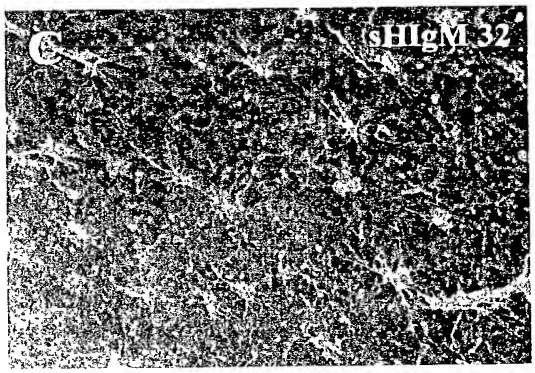


FIG. 21D

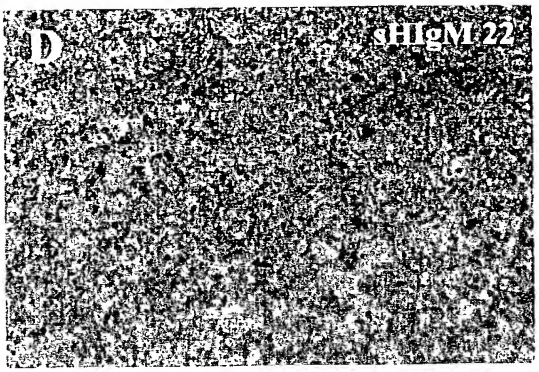


FIG. 21E

FIG. 22A

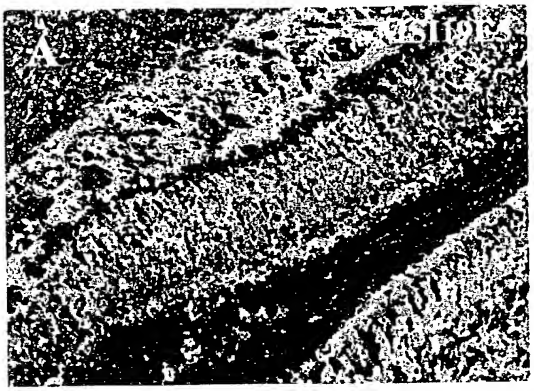


FIG. 22B

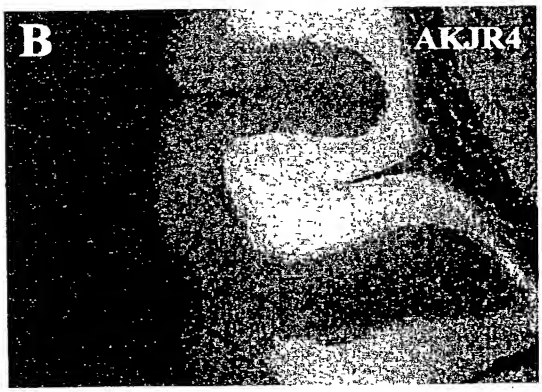


FIG. 22C

FIG. 22D

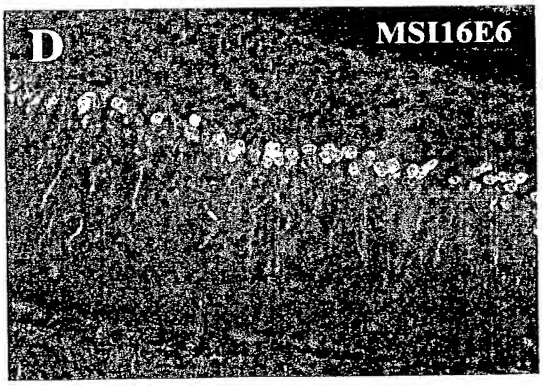


FIG. 22E

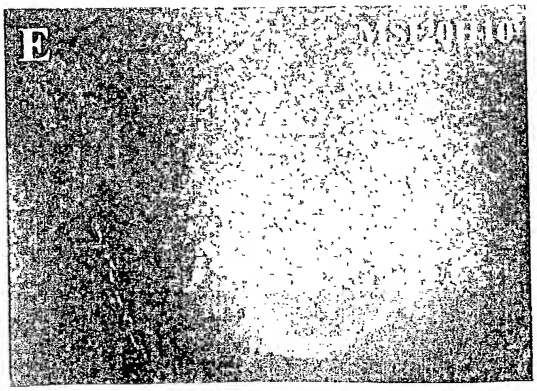


FIG. 22F

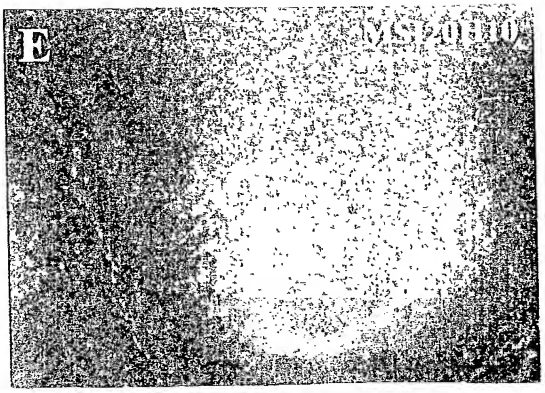


FIG. 23A

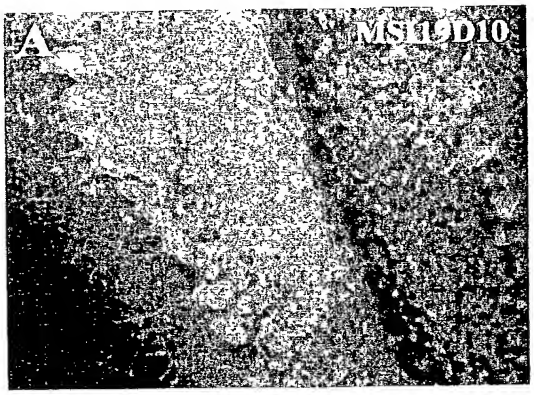


FIG. 23B

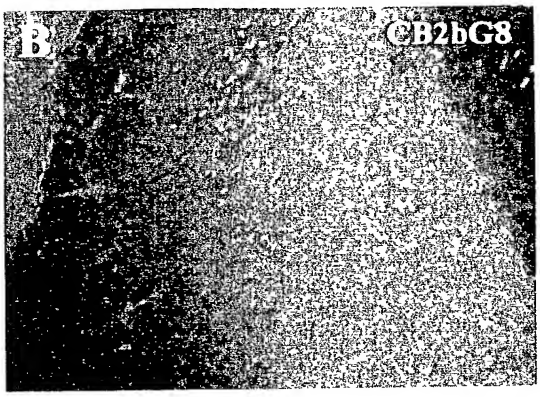


FIG. 23C

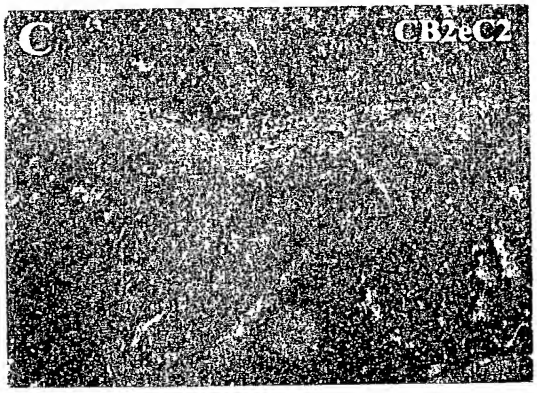


FIG. 23D

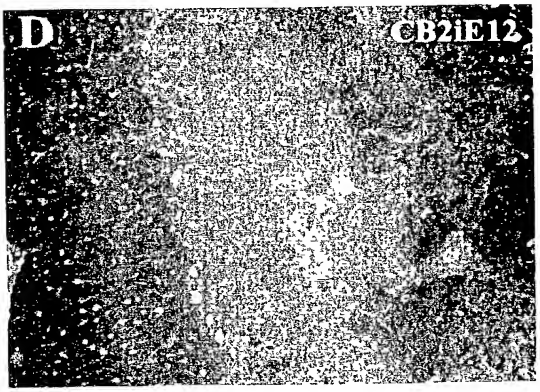


FIG. 23E

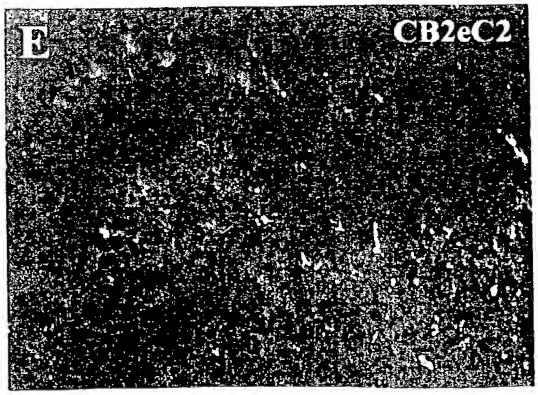
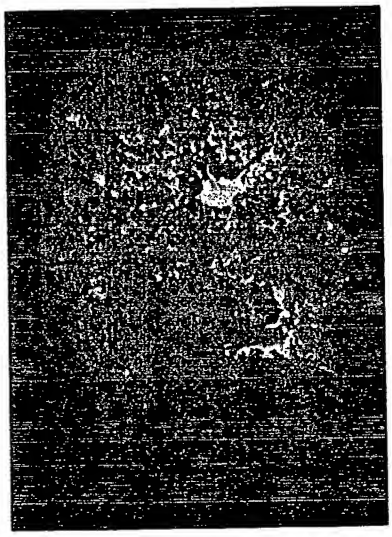


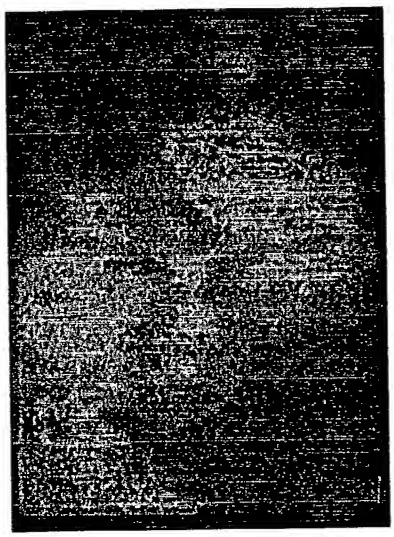
FIG. 23F

FIG. 24A



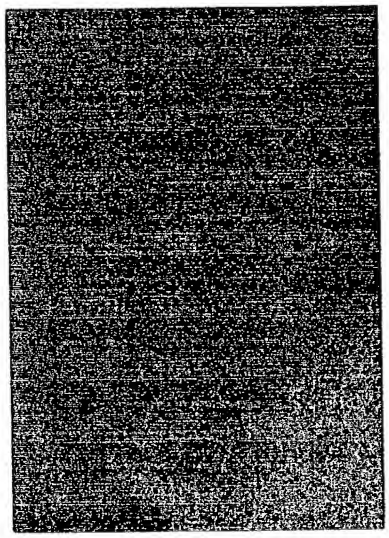
Polyclonal hIgM

FIG. 24B



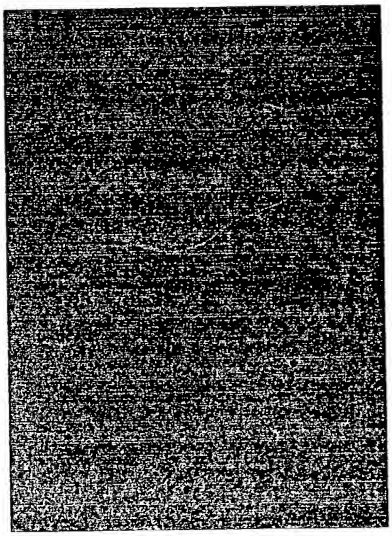
MBP+ 0L

FIG. 24C



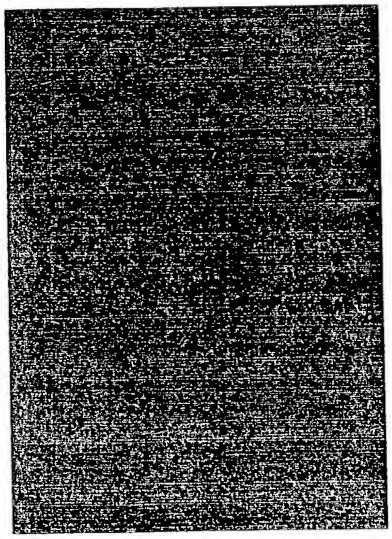
Polyclonal hIgG

FIG. 24D



sHIgM 1

FIG. 24E



sHIgM 2

FIG. 25A

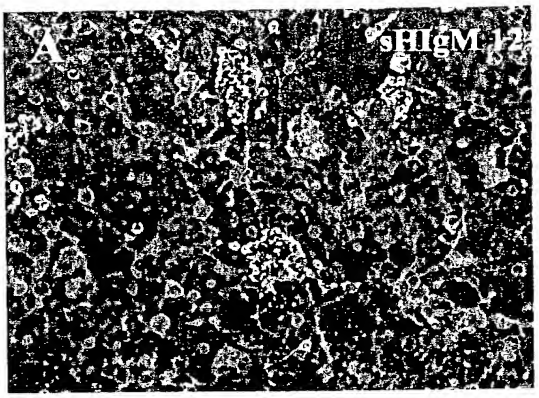


FIG. 25B

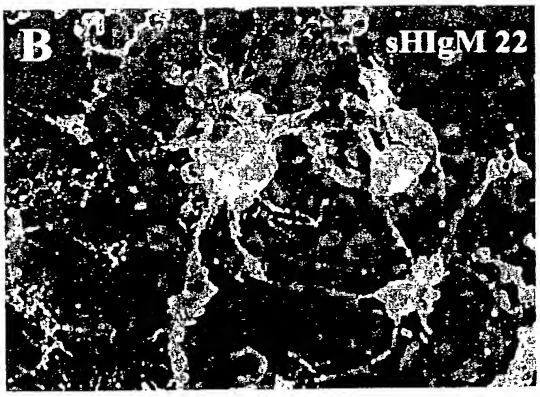


FIG. 25C

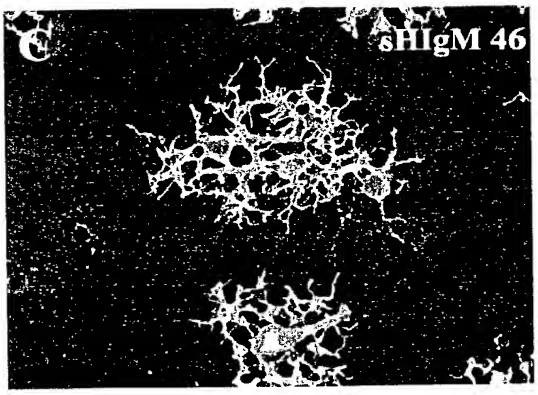


FIG. 25D

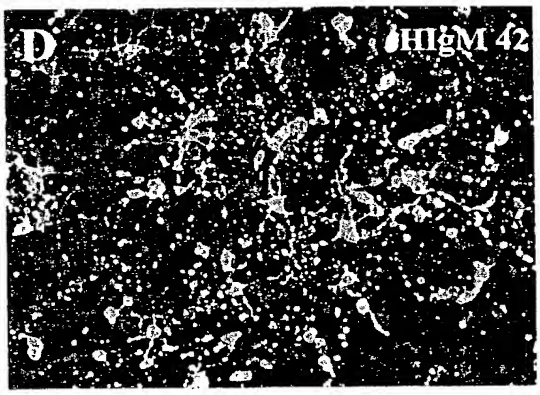


FIG. 25E

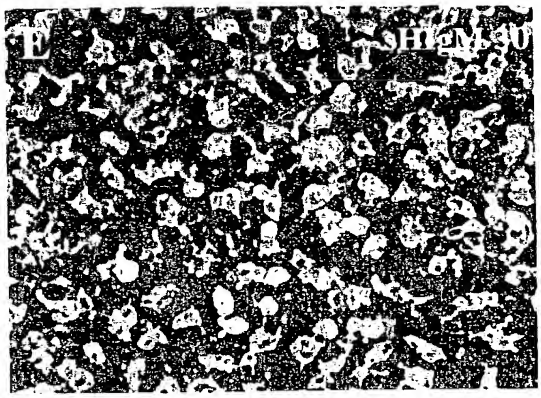


FIG. 25F

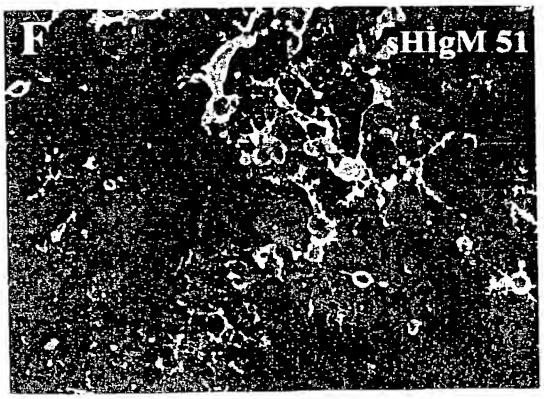


FIG. 26A

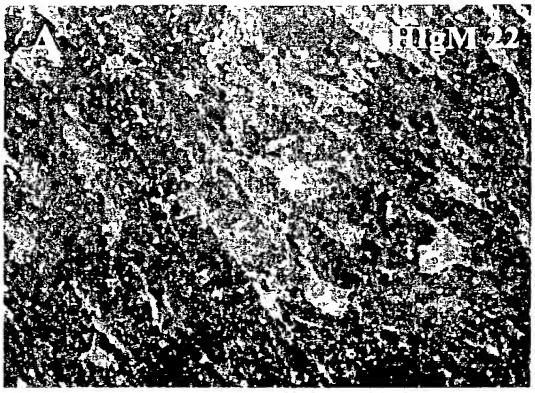


FIG. 26B

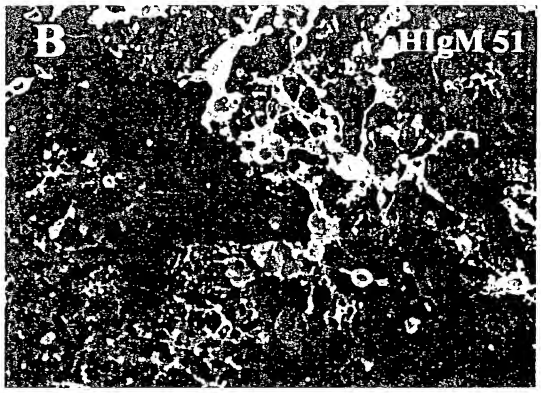


FIG. 26C

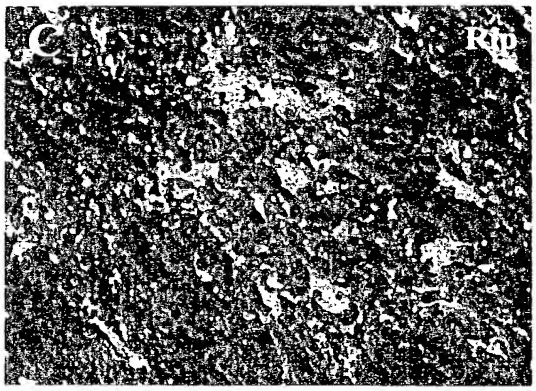


FIG. 26D

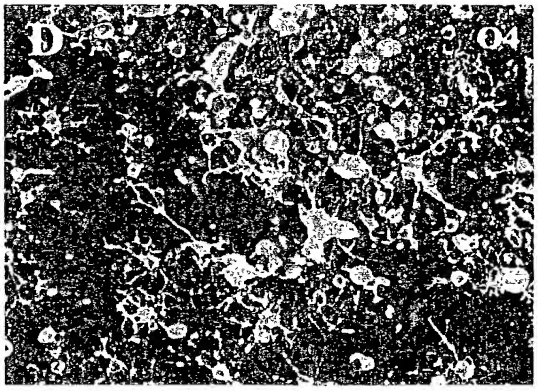


FIG. 26E

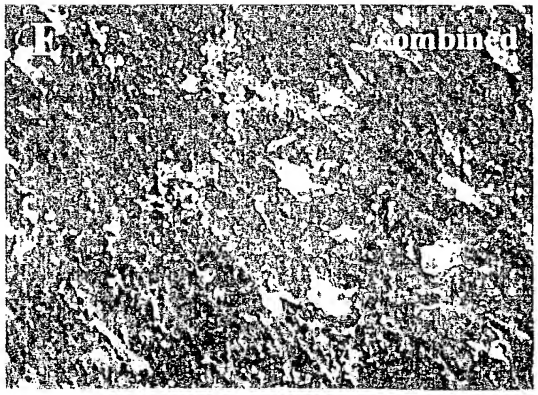


FIG. 26F

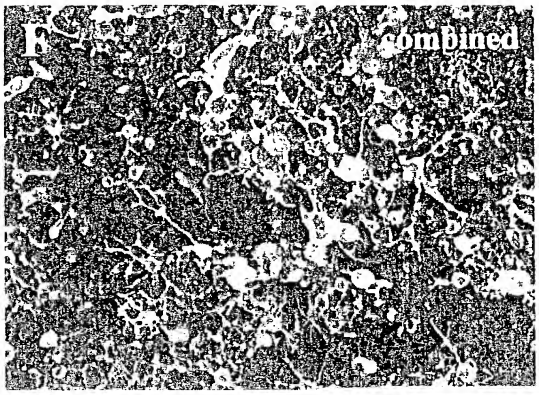


FIG. 27A

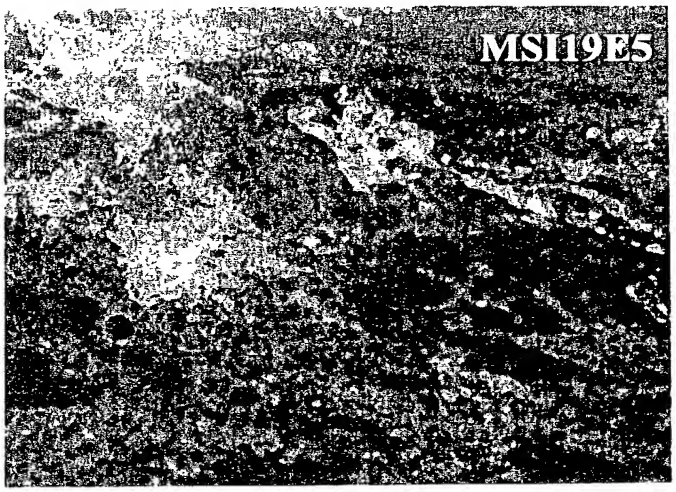


FIG. 27B

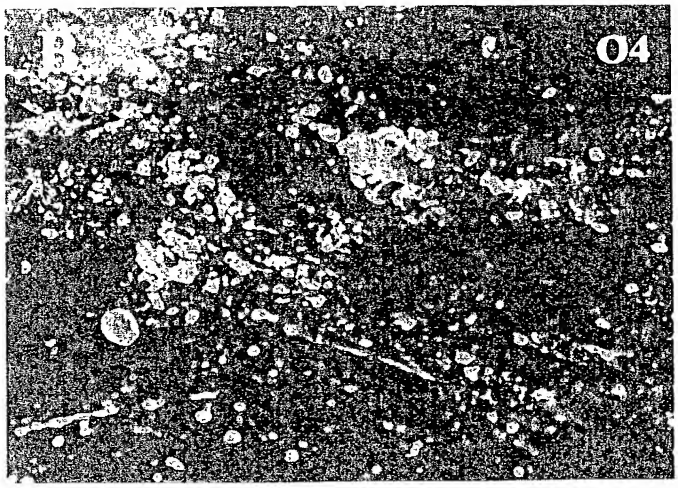


FIG. 27C

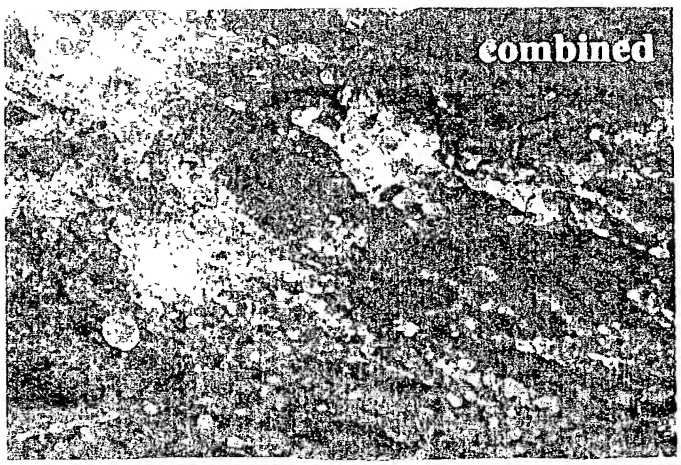


FIG. 29

ebvHlgMs Characterized by Binding to SCH via ELISA

FIG. 30A

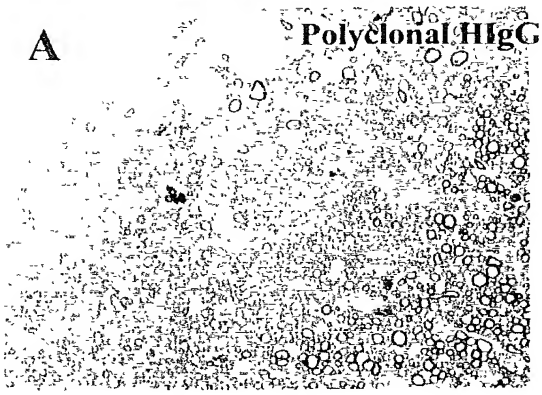


FIG. 30B

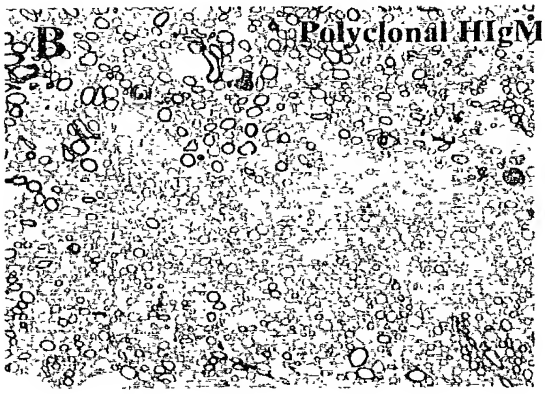


FIG. 30C

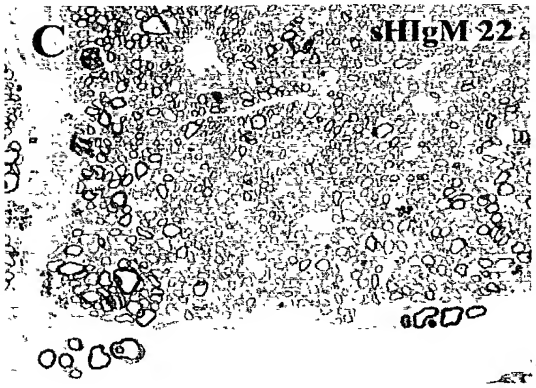


FIG. 30D

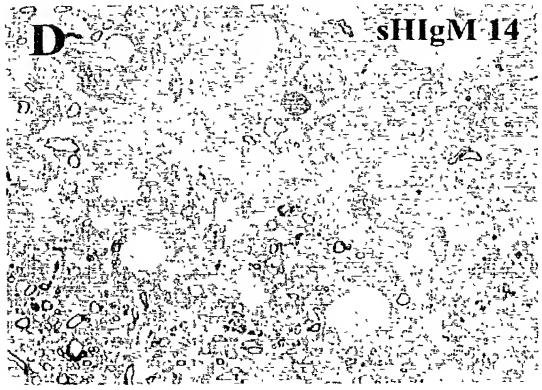


FIG. 30E

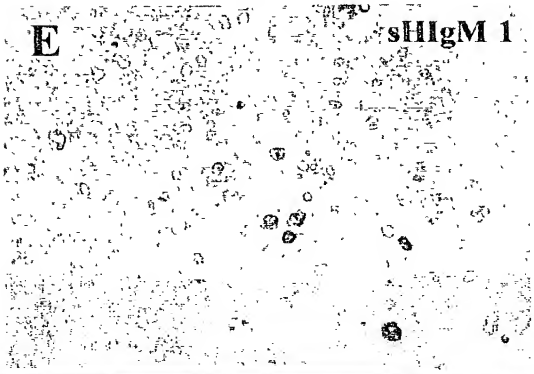


FIG. 30F

FIG. 31A

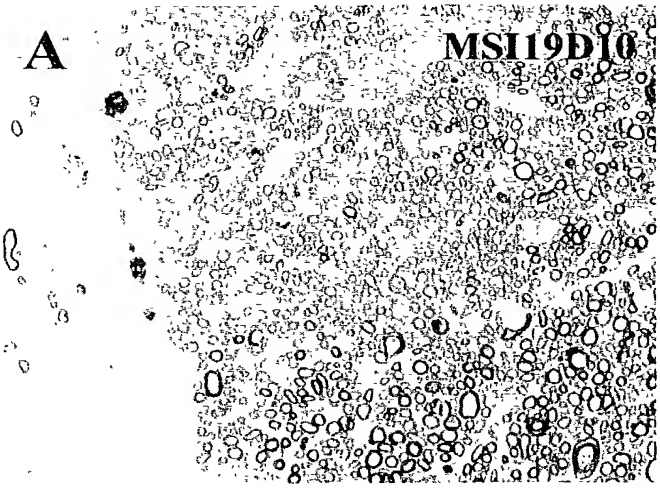


FIG. 31B

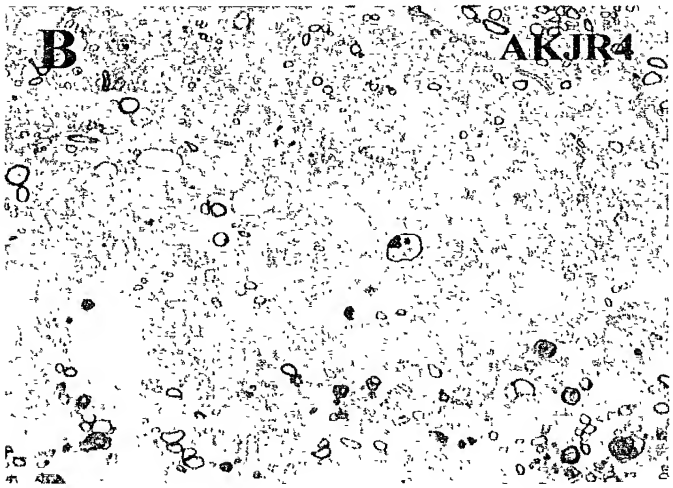
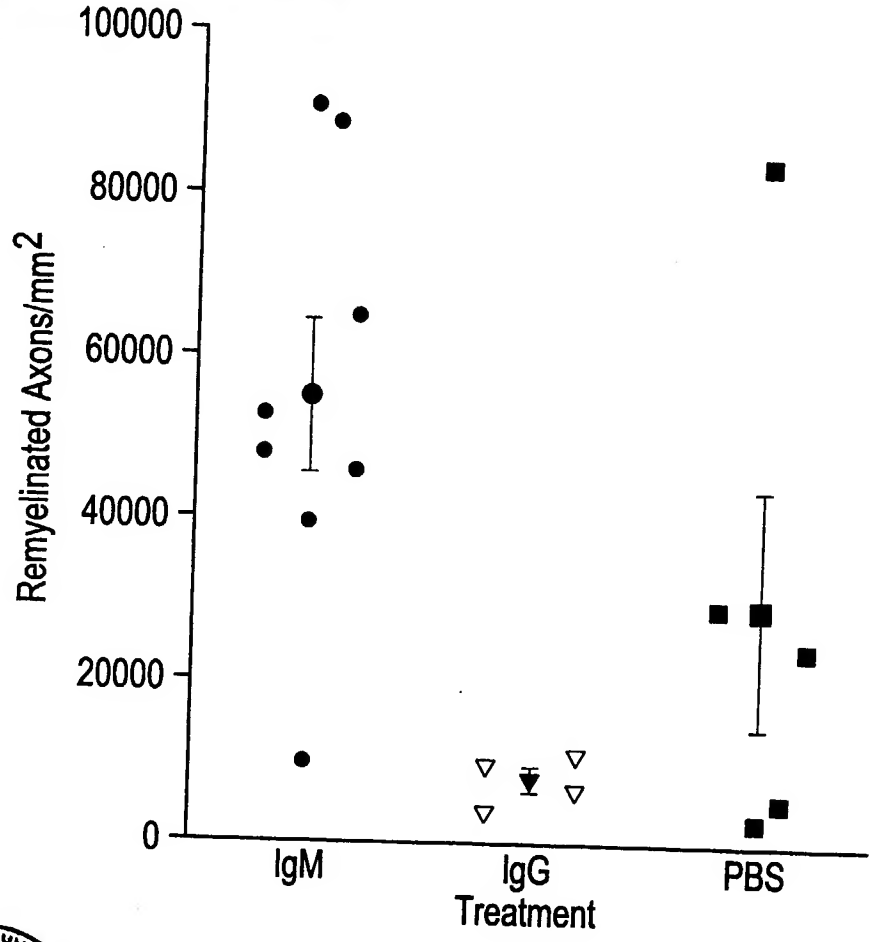


FIG. 32

Lysolecithin Experiment 21 Day Experiment



ANIMAL #	STRAIN	RX	DAY RX	Axons/mm^2
1091-98	SJL	HUMAN IGM	7	47881.04
1093-98	SJL	HUMAN IGM	7	90745.80
1094-98	SJL	HUMAN IGM	7	88638.09
1095-98	SJL	HUMAN IGM	7	52767.82
1181-98	SJL	HUMAN IGM	7	45583.42
1182-98	SJL	HUMAN IGM	7	39289.31
1183-98	SJL	HUMAN IGM	7	64636.39
1184-98	SJL	HUMAN IGM	7	9937.24
Mean				**54934.89**
SEM				**9376.95**
1135-98	SJL	HUMAN IGG	7	9433.96
1139-98	SJL	HUMAN IGG	7	3702.92
1140-98	SJL	HUMAN IGG	7	11028.19
1141-98	SJL	HUMAN IGG	7	6493.06
Mean				**7664.53**
SEM				**1620.49**
1122-98	SJL	PBS	7	2457.22
1124-98	SJL	PBS	7	23746.34
1170-98	SJL	PBS	7	83549.17
1171-98	SJL	PBS	7	4819.92
1172-98	SJL	PBS	7	28878.82
Mean				**28690.29**
SEM				**14649.14**

FIG. 33

Hapten Elisa

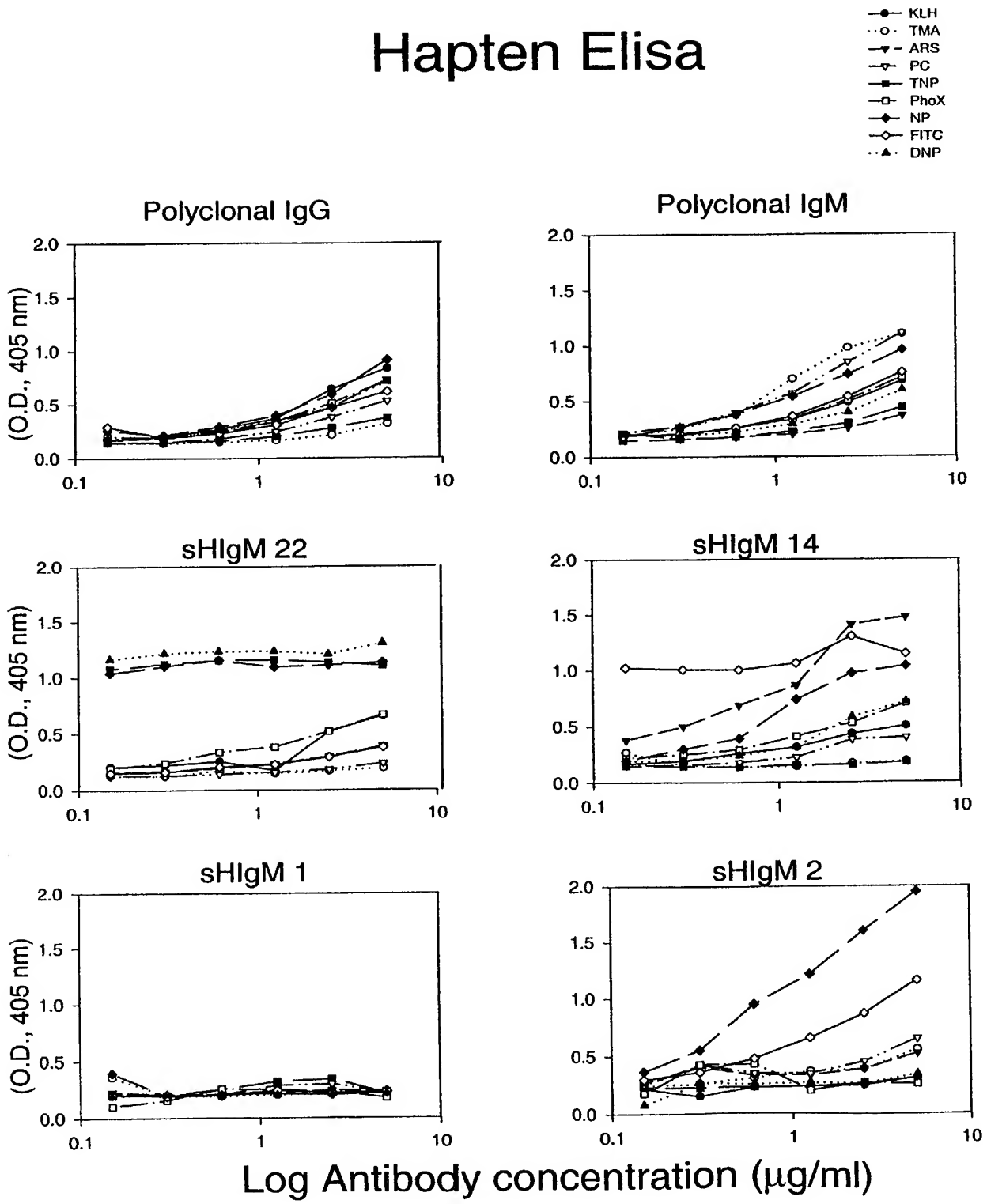


FIG. 34

Protein Elisa

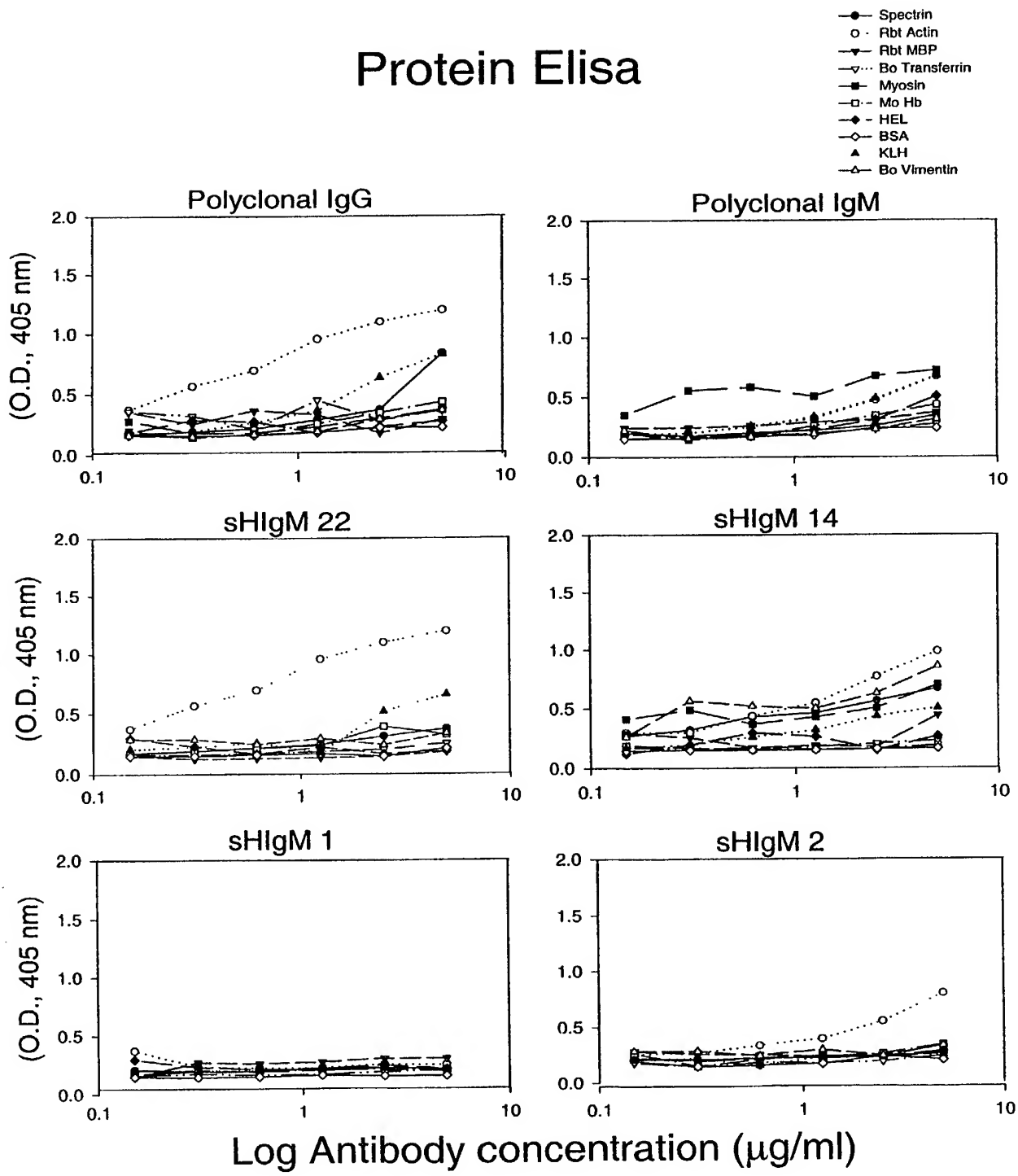


FIG. 35

```
/FR1-------------------------------------------------------------
 1   2   3   4   5   6   7   8   9  10   11  12  13  14  15
 Q   V   Q   L   V   E   S   G   G   G   V   V   Q   P   G
CAG GTG CAG CTG GTG GAG TCT GGG GGA GGC GTG GTC CAG CCT GGG
Clone A sH-IgM.22 VH                   G
Clone B sH-IgM.22 VH
-------------------------------------------------------------
 16  17  18  19  20  21  22  23  24  25  26  27  28  29  30
 R   S   L   R   L   S   C   A   A   S   G   F   T   F   S
AGG TCC CTG AGA CTC TCC TGT GCA GCC TCT GGA TTC ACC TTC AGT


/CDR1---------------/FR2-----------------------------------------
 31  32  33  34  35  36  37  38  39  40  41  42  43  44  45
 S   S   G   M   H   W   V   R   Q   A   P   G   K   G   L
AGC TAT GGC ATG CAC TGG GTC CGC CAG GCT CCA GGC AAG GGG CTG
     C                       A
     C
---------------/CDR2-----------------------------------------
 46  47  48  49  50  51  52 52A  53  54  55  56  57  58  59
 E   W   V   A  V(I) I   S   Y   D   G   S   R   K   Y   Y
GAG TGG GTG GCA GTT ATA TCA TAT GAT GGA AGT AAT AAA TAC TAT
                    T                       GG
                  A C   T                   GG
----------------------/FR3-----------------------------------
60  61  62  63  64  65  66  67  68  69  70  71  72  73  74
A   D   S   V   K   G   R   F   T   I   S   R   D   N   S
GCA GAC TCC GTG AAG GGC CGA TTC ACC ATC TCC AGA GAC AAT TCC
                                                    C
                                                    C
-------------------------------------------------------------
 75  76  77  78  79  80  81  82 82A 82B 82C  83  84  85  86
 K   N   T   L   Y   L   Q   M   N   S   L   T   A  D(E) D
AAG AAC ACG CTG TAT CTG CAA ATG AAC AGC CTG AGA GCT GAG GAC
          T                                 CG      C
          T   C                             C
------------------------------/CDR3-----------------------
 87  88  89  90  91  92  93  94  95  96  97  98  99 100100A
 T   A   V   Y   Y   C   A   K   G   V   T   G   S   P   T
ACG GCT GTG TAT TAC TGT GCG AAA GAG GTG ACT GCT ATT CCC TAC
                    T           GA          G   G   G ACG
                                GA          G   G   G ACG
-----------/FR4-------------------------------------------------
100B101 102 103 104 105 106 107 108 109 110 111 112 113
 L   D   Y   W   G   Q   G   T   L   V   T   V   S   S
TTT GAC TAC TGG GGC CAG GGA ACC CTG GTC ACC GTC TCC TCA
C                                                   G
C                                                   G
```

FIG. 36

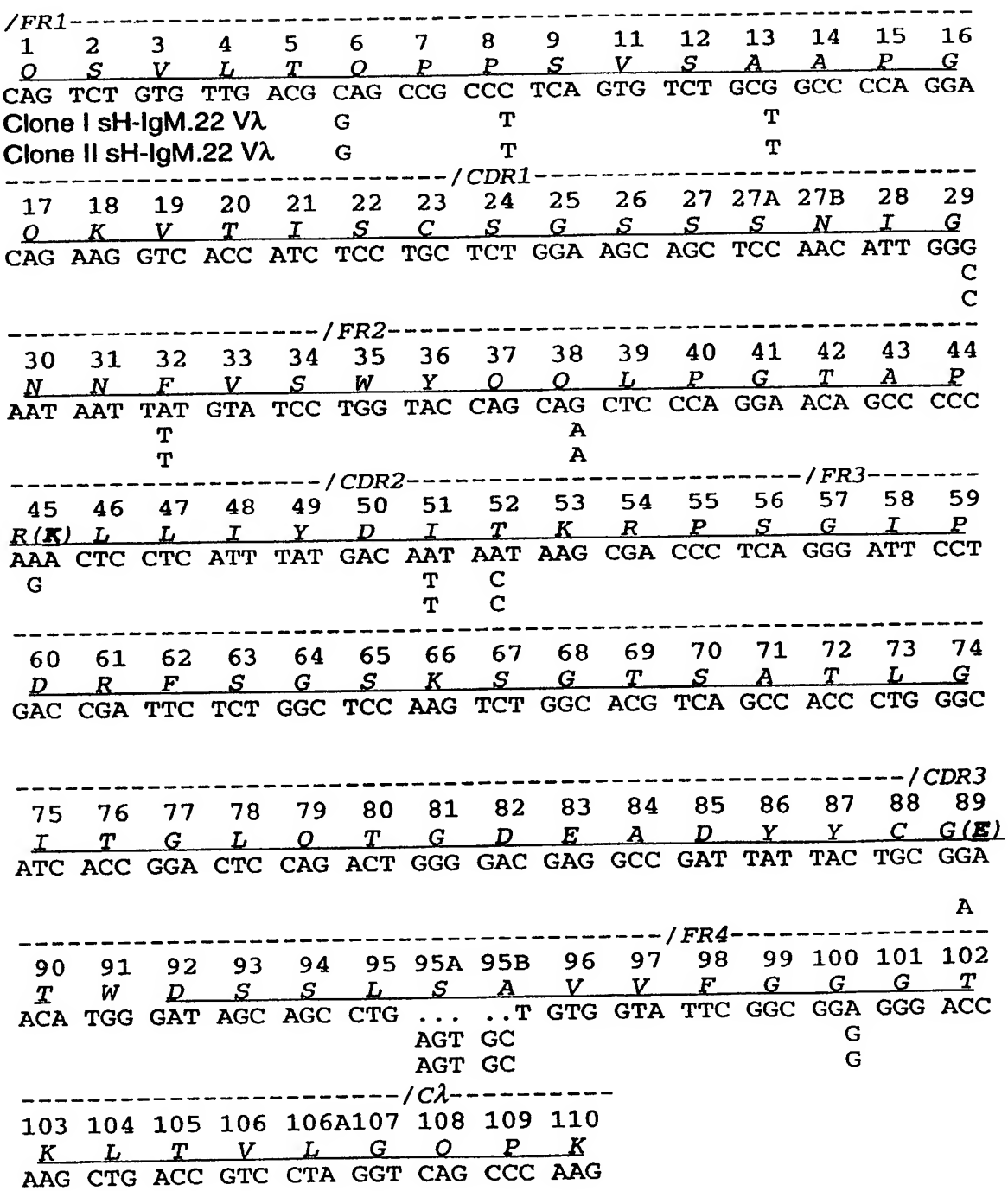


FIG. 37

Sequence of MSI 19-D10 VH

```
FR1-------------------------------------------------------------
 1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16
CAG GTG CAG CTG CAG GAG TCG GGC CCA GGA CTG GTG AAG CCT TCG GAG
 Q   V   Q   L   Q   E   S   G   P   G   L   V   K   P   S   E

-----------------------------------------------------/CDR1
17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
ACC CTG TCC CTC ACC TGC ACT GTC TCT GGT GGC TCC ATC AGT AGT
 T   L   S   L   T   C   T   V   S   G   G   S   I   S   S

---------------/FR2-----------------------------------------
32  33  34  35  36  37  38  39  40  41  42  43  44  45  46
TAC TAC TGG AGC TGG ATC CGG CAG CCC CCA GGG AAG GGA CTG GAG
 Y   Y   W   S   W   I   R   Q   P   P   G   K   G   L   E

-----------/CDR2-------------------------------------------
47  48  49  50  51  52  53  54  55  56  57  58  59  60  61
TGG ATT GGG TAT ATC TAT TAC AGT GGG AGC ACC AAC TAC AAC CCC
 W   I   G   Y   I   Y   Y   S   G   S   T   N   Y   N   P

---------------/FR3-----------------------------------------
62  63  64  65  66  67  68  69  70  71  72  73  74  75  76
TCC CTC AAG AGT CGA GTC ACC ATA TCA GTA GAC ACG TCC AAG AAC
 S   L   K   S   R   V   T   I   S   V   D   T   S   K   N

-------------------------------------------------------------
77  78  79  80  81  82  82A 82B 82C 83  84  85  86  87  88
CAG TTC TCC CTG AAG CTG AGC TCT GTG ACC GCT GCG GAC ACG GCC
 Q   F   S   L   K   L   S   S   V   T   A   A   D   T   A

----------------------/CDR3---------------------------------
89  90  91  92  93  94  95  96  97  98  99  100 100A100B100C
GTG TAT TAC TGT GCG AGG TCG GCA CAG CAG CAG CTG GTA TAC TAC
 V   Y   Y   C   A   R   S   A   Q   Q   Q   L   V   Y   Y

-----------/FR4-----------------------------------------/Cμ-
100D 101 102 103 104 105 106 107 108 109 110 111 112 113 114
TTT GAC TAC TGG GGC CAG GGA ACC CTG GTC ACC GTC TCC TCA GGG
 F   D   Y   W   G   Q   G   T   L   V   T   V   S   S   G
```

FIG. 38

Sequence of MSI 19-D10 Vκ

```
FR 1----------------------------------------------------------
 1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
GAC ATC GTG ATG ACC CAG TCT CCA GAC TCC CTG GCT GTG TCT CTG
 D   I   V   M   T   Q   S   P   D   S   L   A   V   S   L

------------------------------/CDR1-----------------------
16  17  18  19  20  21  22  23  24  25  26  27  27A 27B 27C
GGC GAG AGG GCC ACC ATC AAC TGC AAG TCC AGC CAG AGT GTT TTA
 G   E   R   A   T   I   N   C   K   S   S   Q   S   V   L

-----------------------------------------/FR2------------
27D 27E 27F 28  29  30  31  32  33  34  35  36  37  38
TAC AGC TCC AAC AAT AAG AAC TAC TTA GCT TGG TAC CAG CAG
 Y   S   S   N   N   K   N   Y   L   A   W   Y   Q   Q

-----------------------------------------------/CDR2----------
39  40  41  42  43  44  45  46  47  48  49  50  51  52  53
AAA CCA GGA CAG CCT CCT AAG CTG CTC ATT TAC TGG GCA TCT ACC
 K   P   G   Q   P   P   K   L   L   I   Y   W   A   S   T

-----------/FR3-----------------------------------------------
54  55  56  57  58  59  60  61  62  63  64  65  66  67  68
CGG GAA TCC GGG GTC CCT GAC CGA TTC AGT GGC AGC GGG TCT GGG
 R   E   S   G   V   P   D   R   F   S   G   S   G   S   G

-------------------------------------------------------------
69  70  71  72  73  74  75  76  77  78  79  80  81  82  83
ACA GAT TTC ACT CTC ACC ATC AGC AGC CTG CAG GCT GAA GAT GTG
 T   D   F   T   L   T   I   S   S   L   Q   A   E   D   V

----------------------/CDR3----------------------------/FR4
84  85  86  87  88  89  90  91  92  93  94  95  96  97  98
GCA GTT TAT TAC TGT CAG CAA TAT TAT AGT ACT CCT CTC ACT TTC
 A   V   Y   Y   C   Q   Q   Y   Y   S   T   P   L   T   F

-----------------------------------/Cκ-----------------------
99  100 101 102 103 104 105 106 107 108 109 110 111 112 113
GGC CCT GGG ACC AAA GTG GAT ATC AAA CGA ACT GTG GCT GCA CCA
```

FIG. 39A

Mixed Primary Glia
sH-IgM.22 Ca^{2+} response

— ratio cell #1
— ratio cell #2
△ sH-IgM.22 (3μg/ml)
▲ Br-A23187 (10μM)

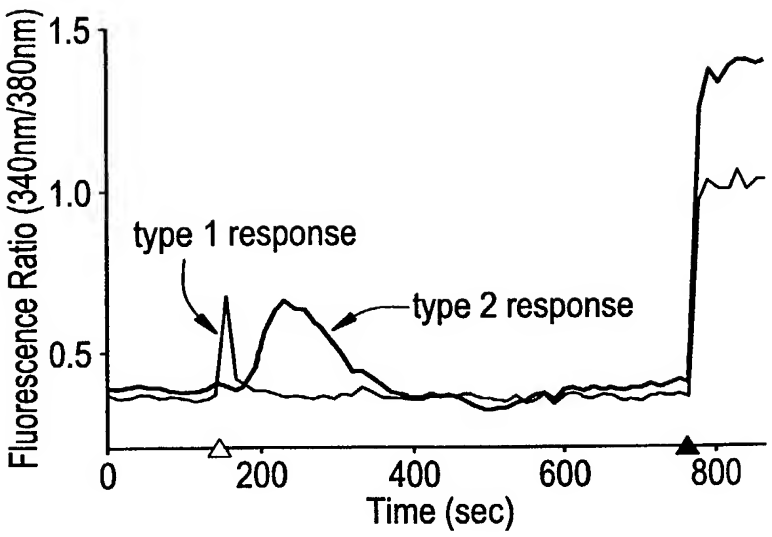


FIG. 39B

Mixed Primary Glia
SCH 94.03 Ca^{2+} response

— ratio cell #1
— ratio cell #2
△ SCH 94.03 (3μg/ml)
▲ Br-A23187 (10μM)

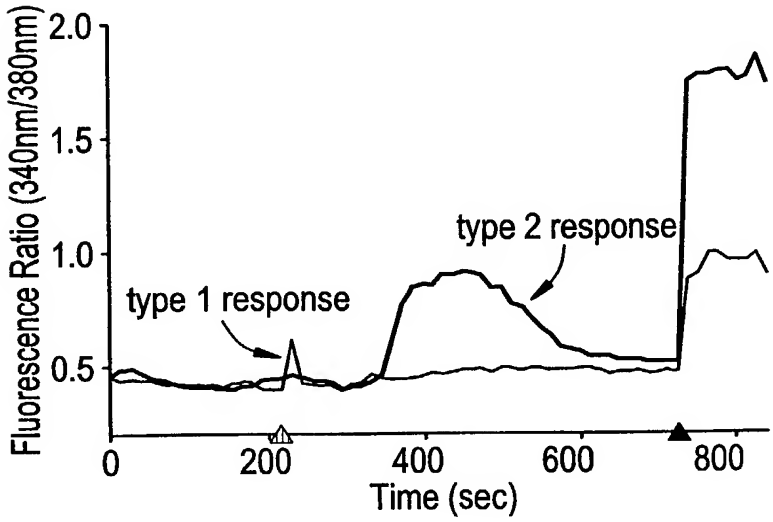


FIG. 39C

Mixed Primary Glia
CH 12/sH-IgM.14 Ca^{2+} response

— ratio cell #1
— ratio cell #2
△ CH 12 (3μg/ml)
△ sH-IgM.14 (3μg/ml)
▲ Br-A23187 (10μM)

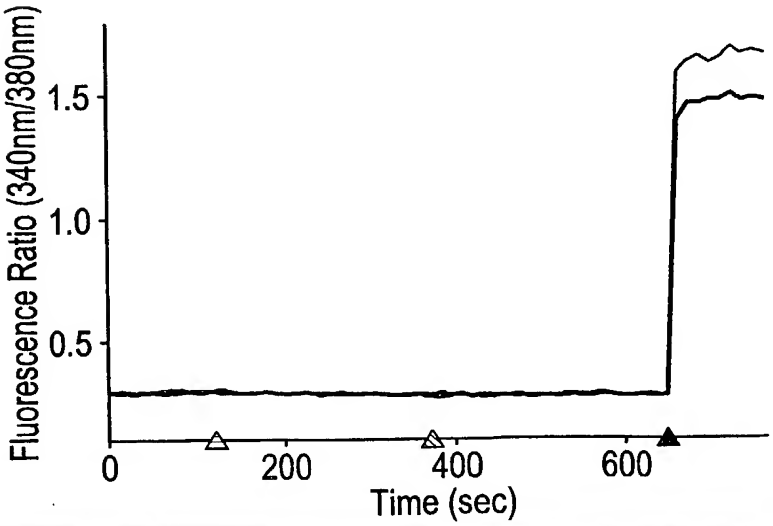


FIG. 40A

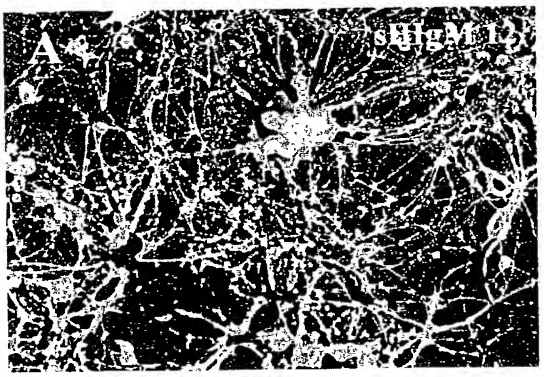


FIG. 40B

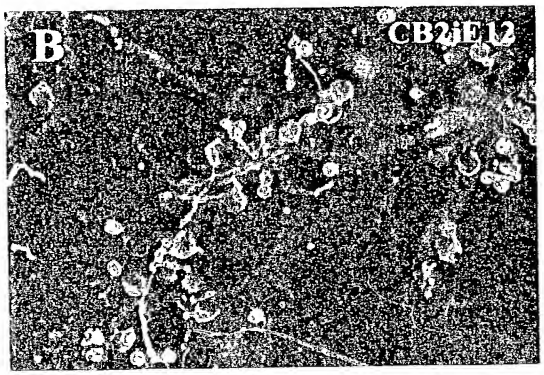


FIG. 41

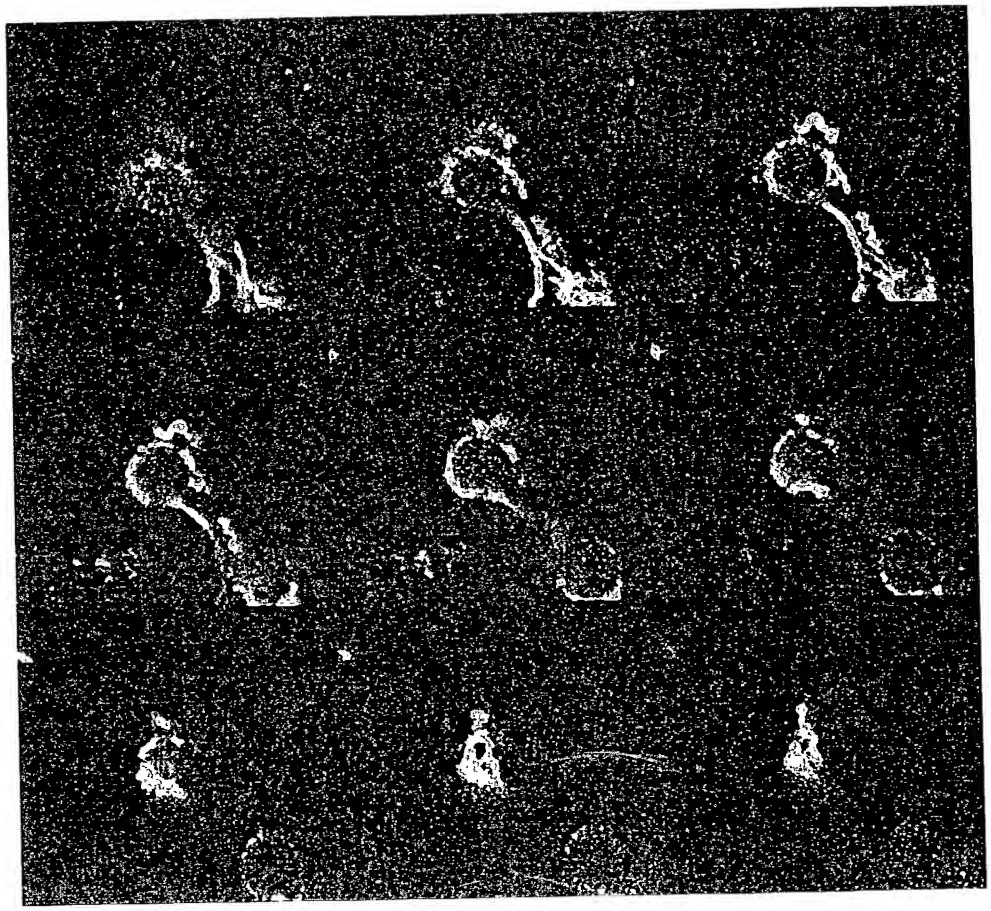


FIG. 42A

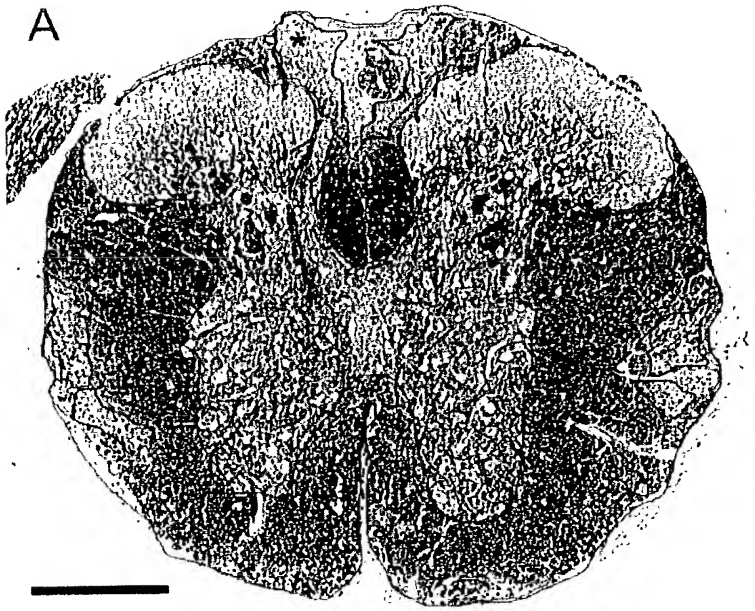


FIG. 42B

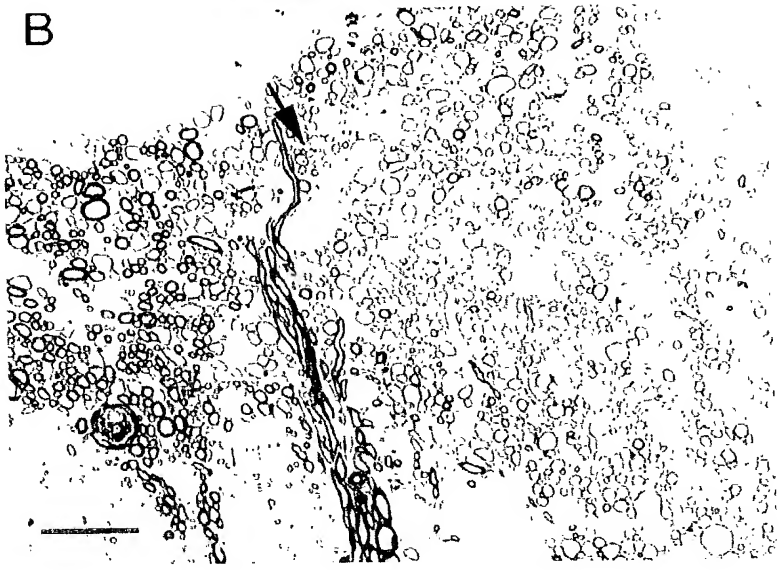


FIG. 43A

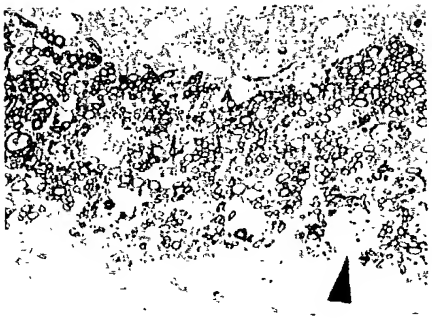


FIG. 43B

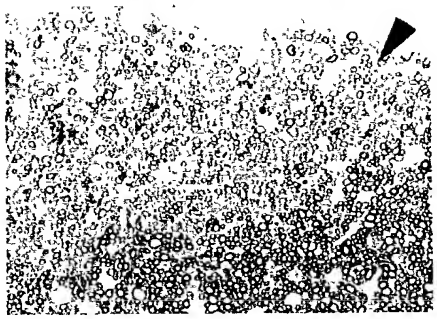


FIG. 43C

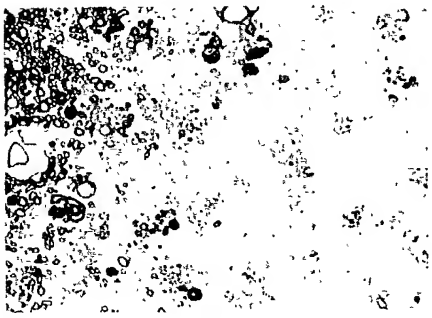


FIG. 43D

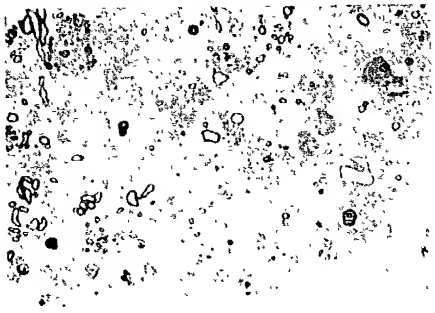


FIG. 43E

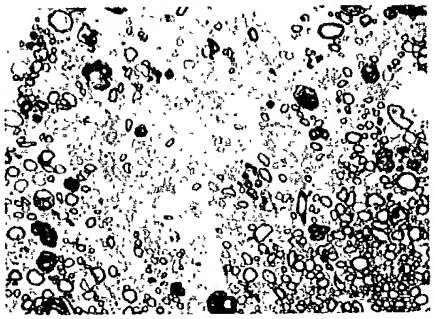


FIG. 43F

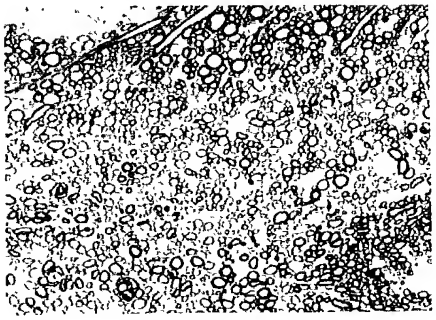


FIG. 43G

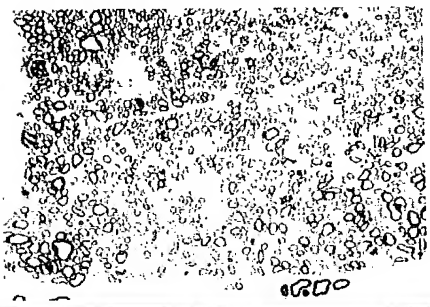


FIG. 43H

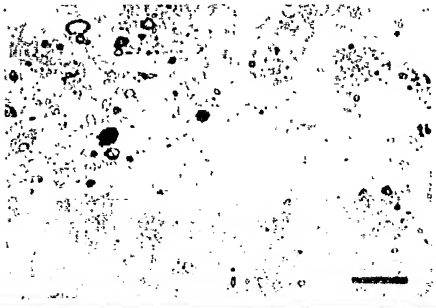


FIG. 44A

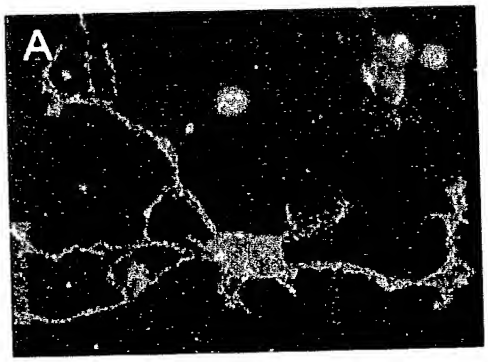


FIG. 44B

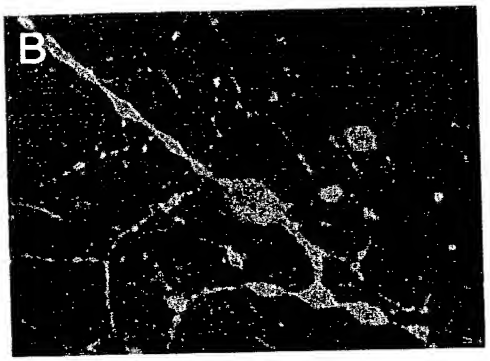


FIG. 44C

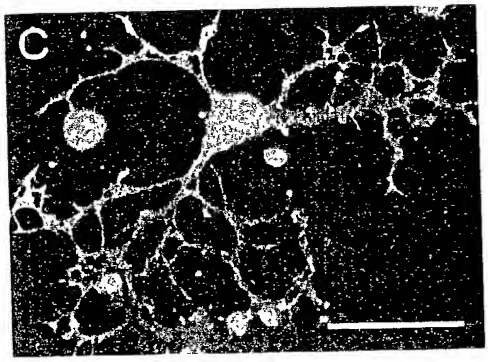


FIG. 44D

FIG. 45

Translation of CB2b-G8 V_H:

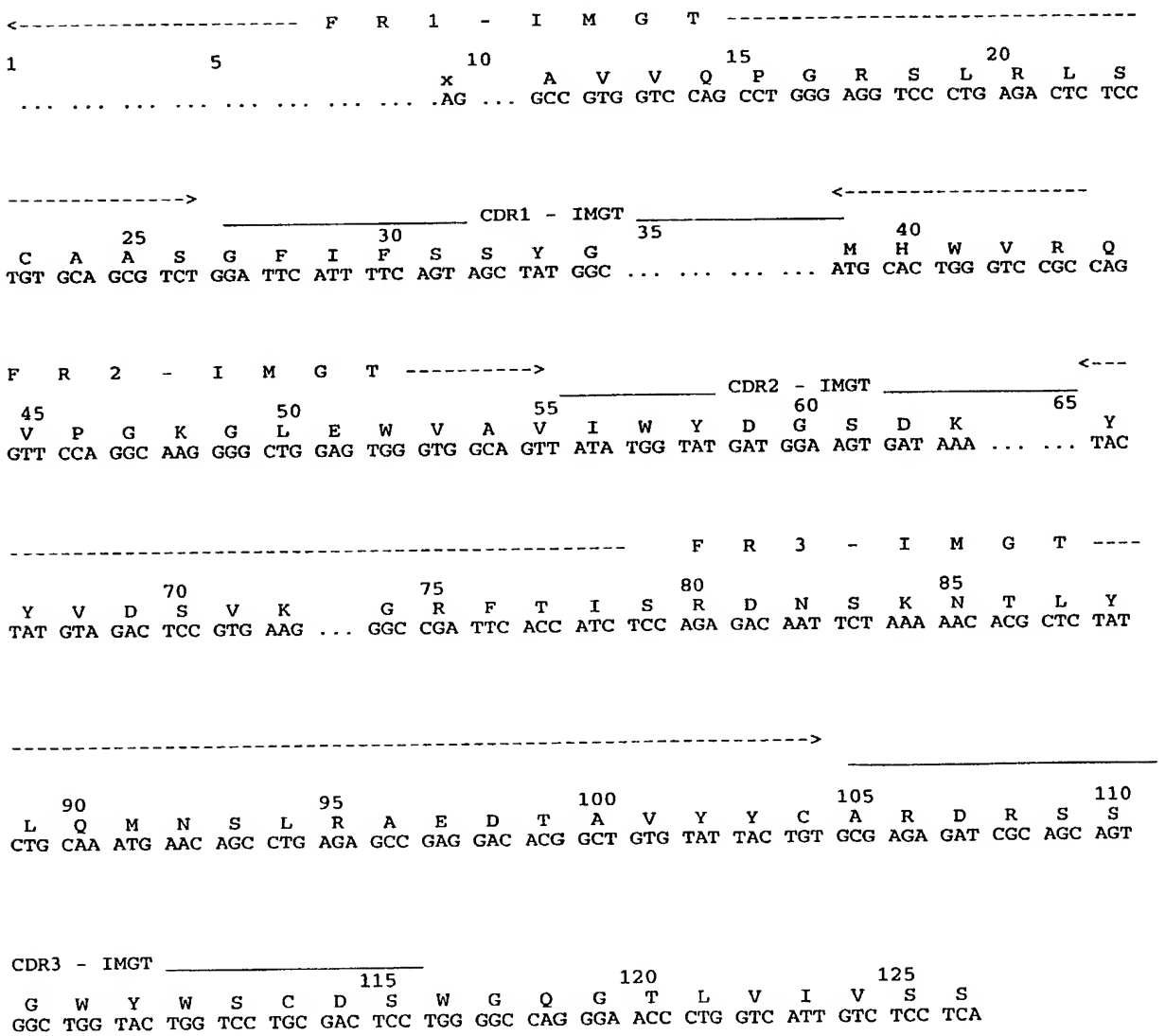


FIG. 46

Translation of CB2b-G8 V_λ

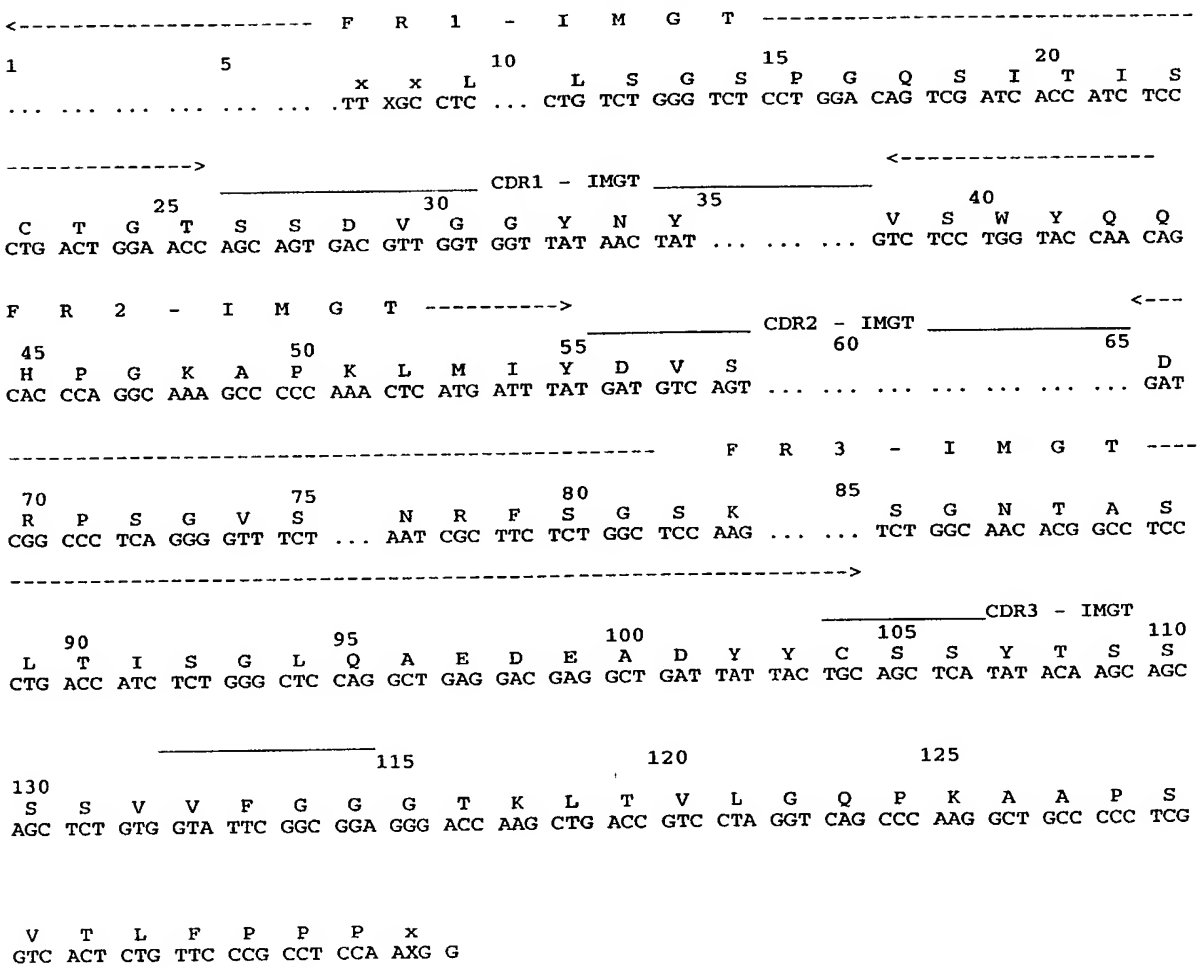


FIG. 47A

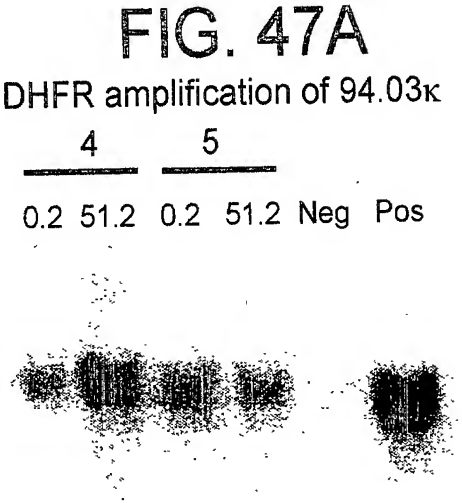


FIG. 47B

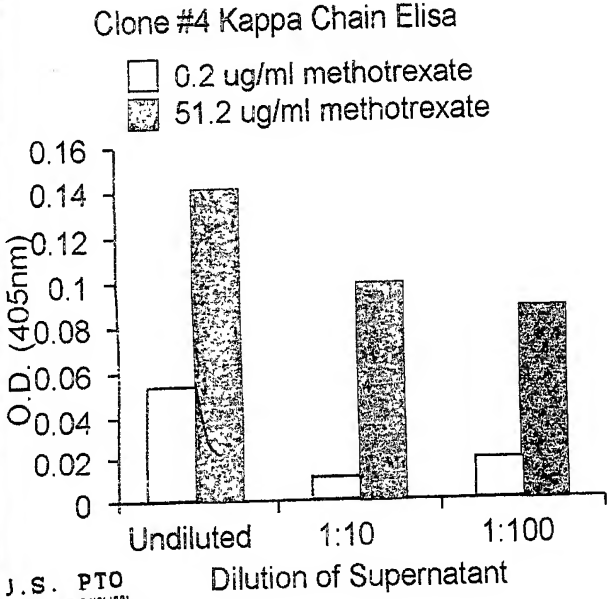


FIG. 47C

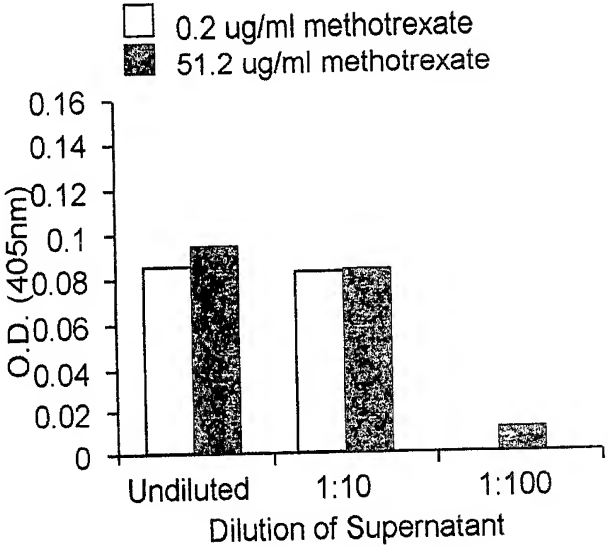
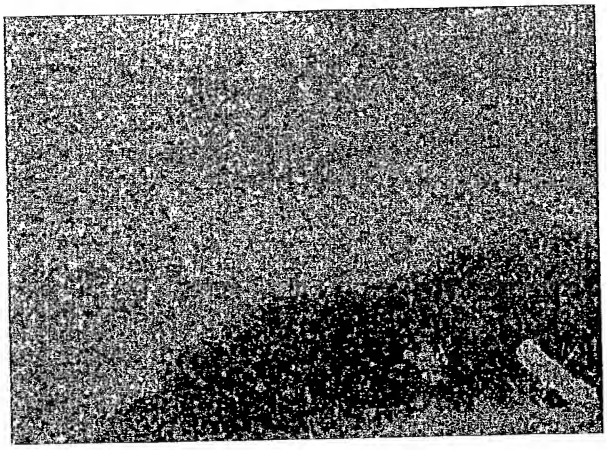
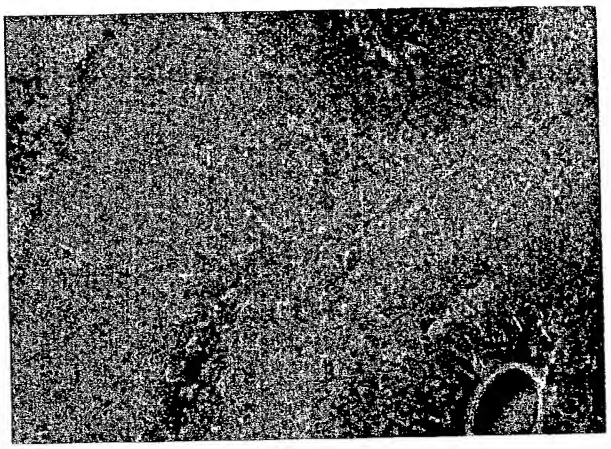


FIG. 49A



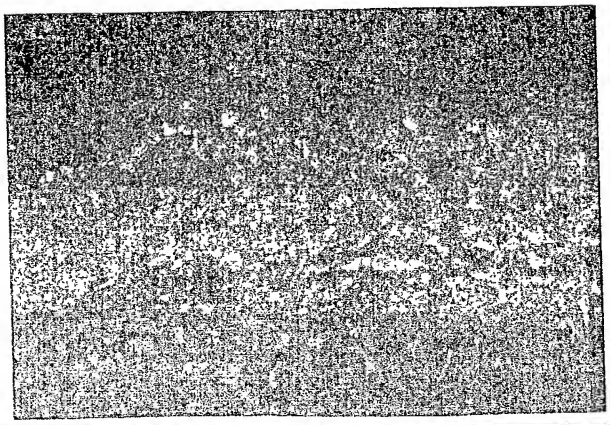
Mouse 94.03

FIG. 49B



Humanized 94.03
clone 1

FIG. 49C



Humanized 94.03
clone 2

FIG. 50A

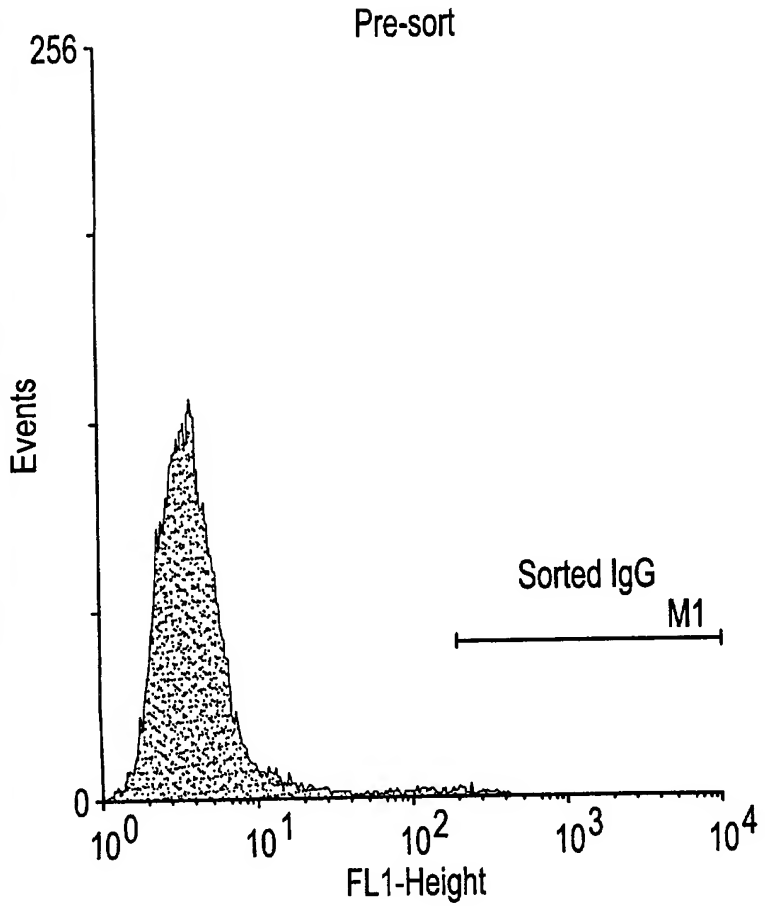


FIG. 50B

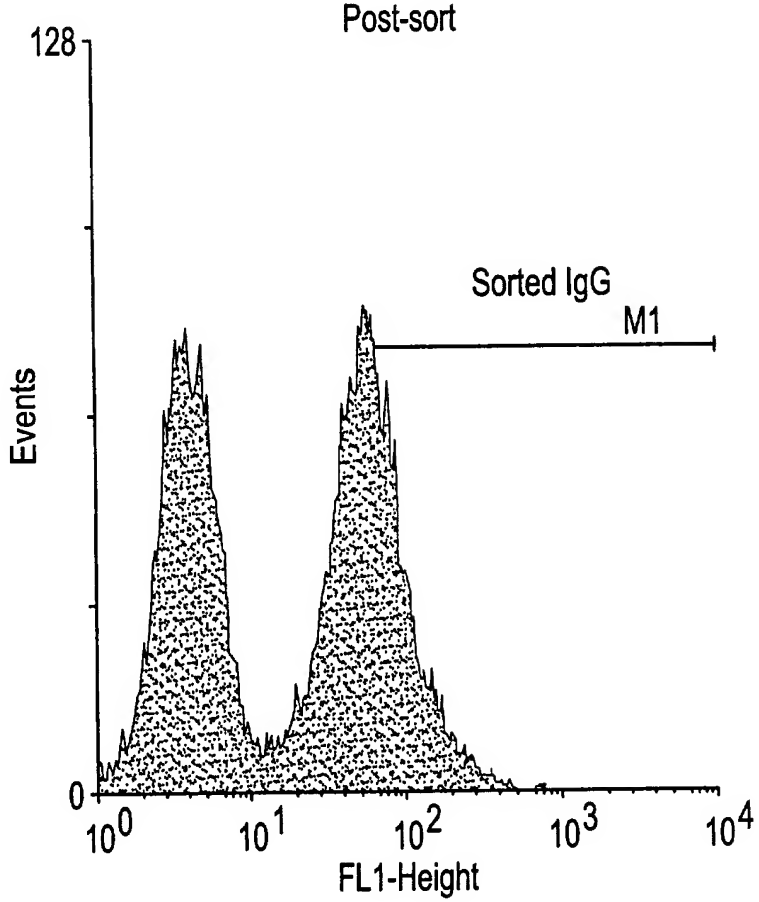
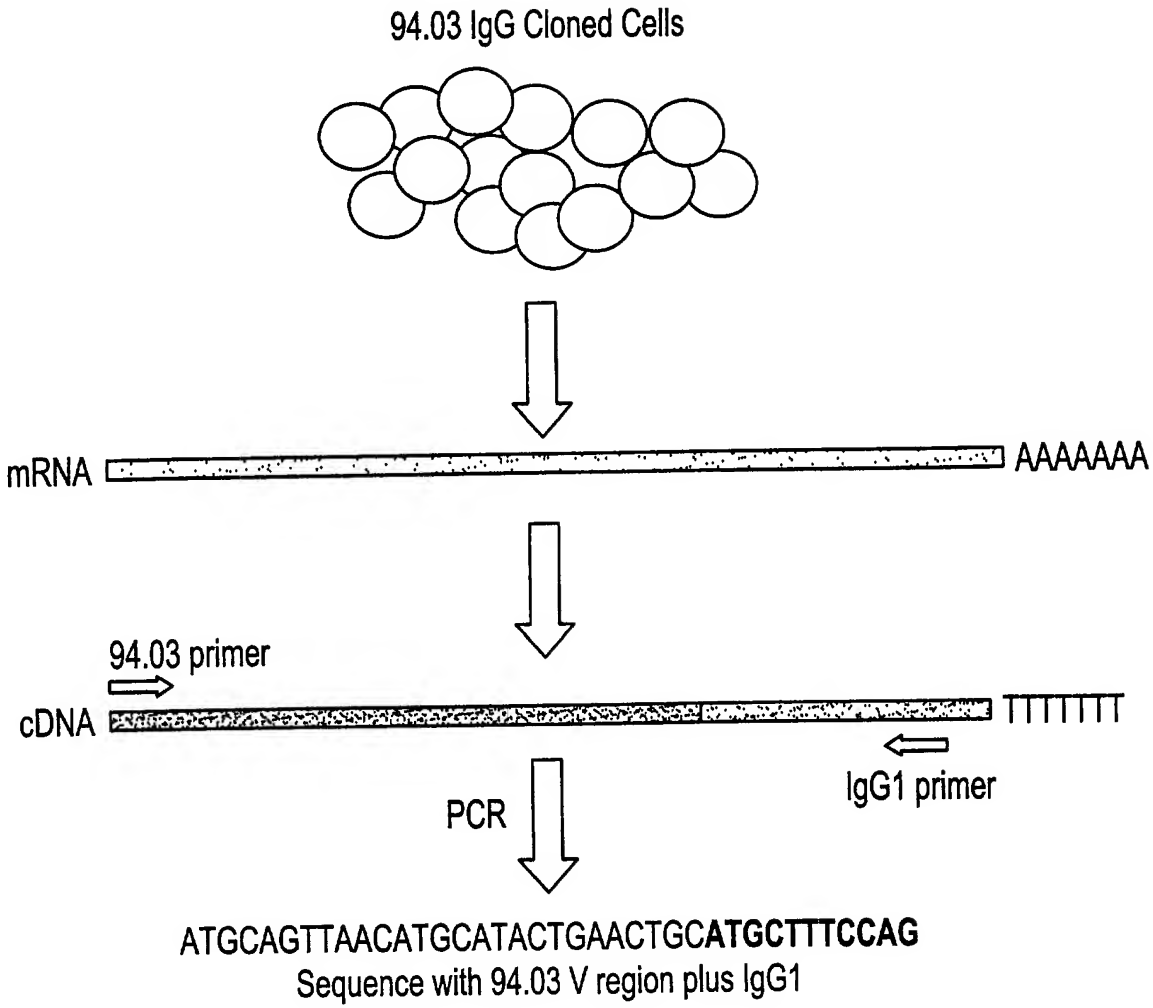


FIG. 51

Sequencing of 94.03 IgG



ATGCAGTTAACATGCATACTGAACTGC**ATGCTTTCCAG**

Sequence with 94.03 V region plus IgG1

FIG. 52

09 V_H Sequence with translation:

```
<---------------------- F R 1 - I M G T ------------------------------

 1          5                  10                  15                  20
 Q [D H L Q Q S G P E L V] K P G A F V K I S
CAG GAT CAC CTG CAG CAG TCT GGA CCT ...GAG CTG GTG AAG CCT GGG GCT TTT GTG AAG ATA TCC

-------------->                                    <--------------------
                ____________________ CDR1 - IMGT _________________
                  25                  30                  35                  40
 C K A S G Y T F T N Y D                 L N W V R Q
TGC AAG GCT TCT GGT TAC ACC TTC ACA AAC TAC GAT ... ... ... ...CTA AAC TGG GTG AGG CAG


F R 2 - I M G T ---------->                                                <--
-
                                        ____________ CDR2 - IMGT _____________
45                  50                  55                  60                  65
 R P G Q G L E W I G W I Y P G N D N T          K
AGG CCT GGA CAG GGC CTT GAG TGG ATT GGA TGG ATT TAT CCT GGA AAT GAT AAT ACT ... ...AAG


------------------------------------------------ F R 3 - I M G T --

            70                  75                  80                  85
 Y N E K F K     G L A S L T A D K S S T T A Y
TAC AAT GAG AAG TTC AAG ...GGC CTG GCC TCA CTG ACT GCA GAC AAG TCC TCC ACC ACA GCC TAC

------------------------------------------------------------------>

                                                    ___________________
    90                  95                  100                 105                 110
 L H L S S L T S E S S A V Y F C A R G L P R
TTG CAT CTC AGC AGC CTG ACT TCT GAG AGC TCT GCA GTC TAT TTC TGT GCA AGA GGG TTA CCT AGG


CDR3 - IMGT ___________
                115                 120
 G W Y F D V W G A G T T V T V S S A
GGC TGG TAC TTC GAT GTC TGG GGC GCA GGG ACC ACG GTC ACC GTC TCC TCA GCT
```

FIG. 53

Translation of 09 kappa light chain 1:

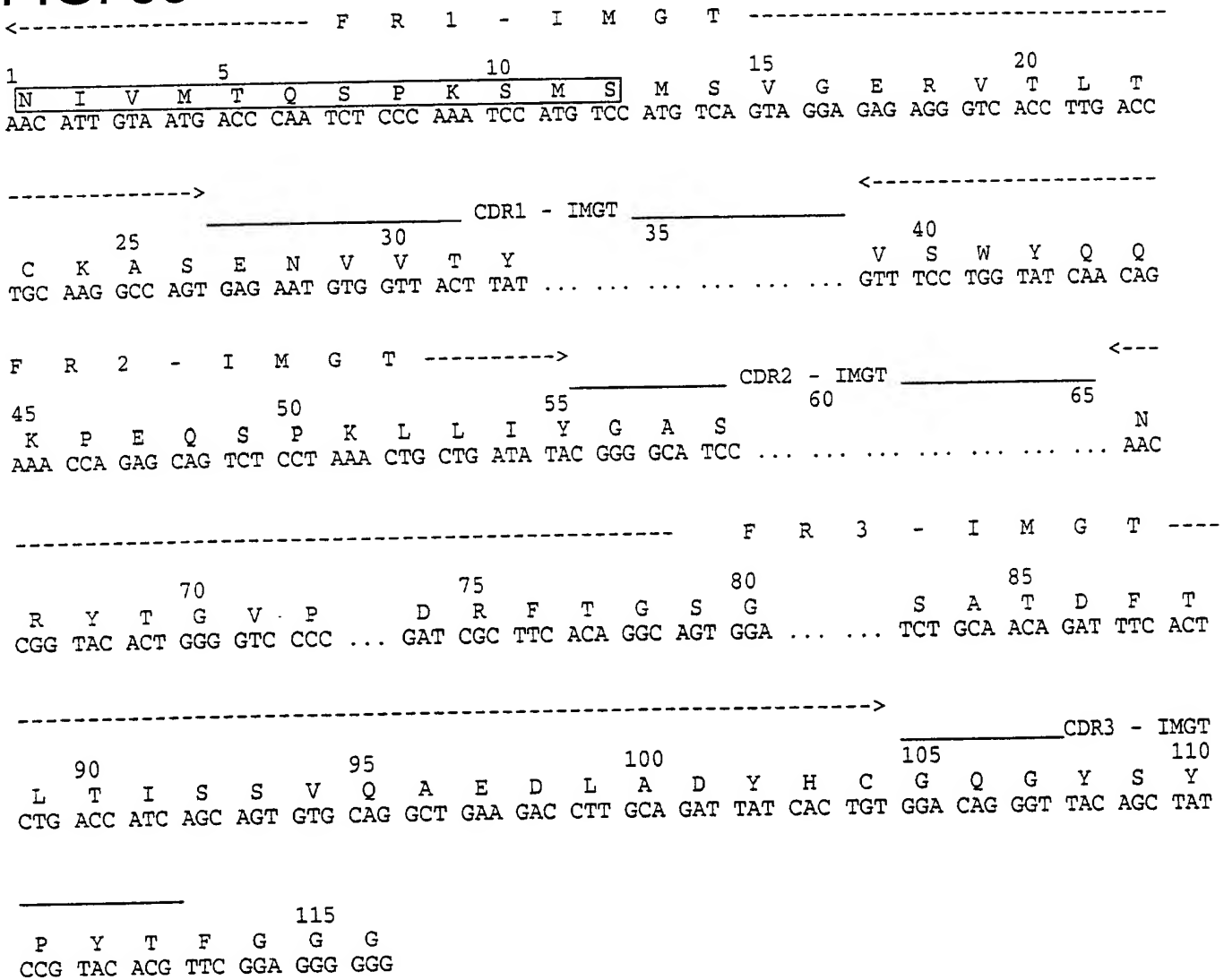


FIG. 54 Translation of 09 kappa light chain 2:

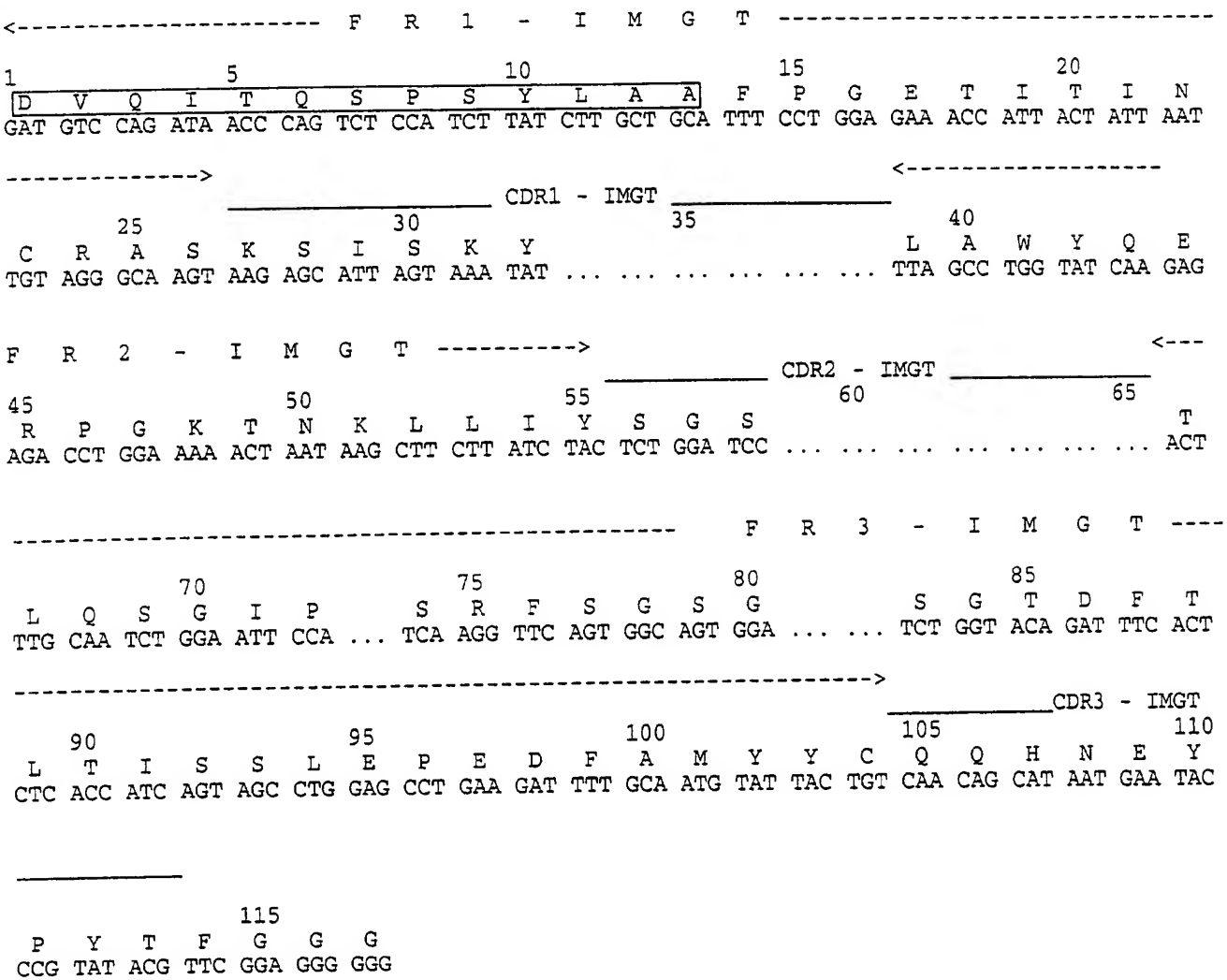


FIG. 55

Translation of AKJR 4 Heavy Chain:

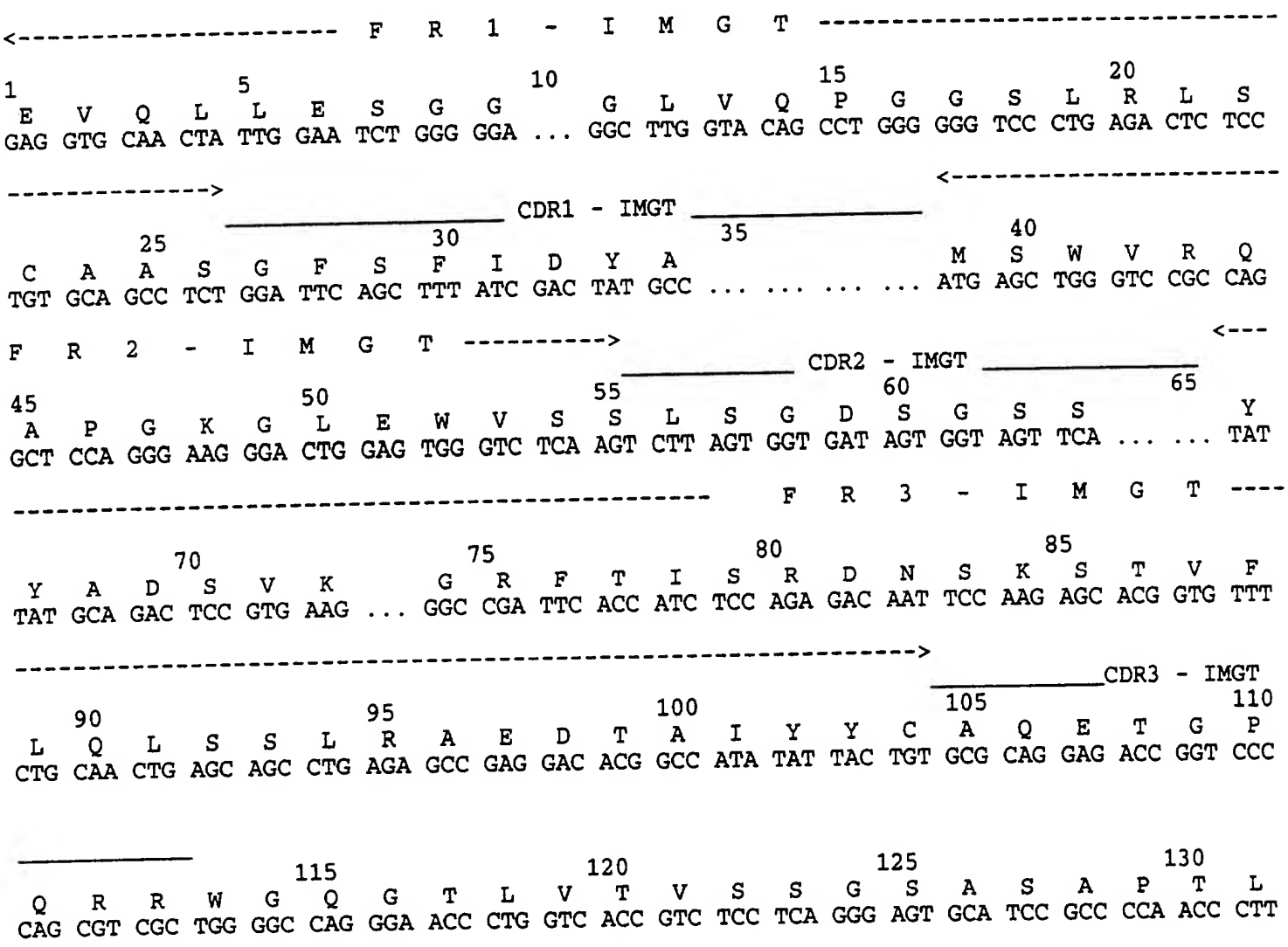


FIG. 56

Translation of AKJR 4 Kappa Light Chain:

```
<---------------------- F   R   1   -   I   M   G   T ------------------------------

1               5                  10                  15                  20
 D   I   Q   M   T   Q   S   P   S   T   L   S   A   S   V   G   D   R   V   T   I   T
GAC ATC CAG ATG ACC CAG TCT CCT TCC ACC CTG TCT GCA TCT GTA GGG GAC AGA GTC ACC ATC ACT

--------------> <--------------------

                ____________________ CDR1 - IMGT _____________
        25                  30          35                  40
 C   R   A   S   Q   S   I   S   S   W                       L   A   W   Y   Q   Q
TGC CGG GCC AGT CAG AGT ATT AGT AGC TGG ... ... ... ... ... ... TTG GCC TGG TAT CAG CAG

F   R   2   -   I   M   G   T ----------> <---
                                ____________ CDR2 - IMGT _____________
45                  50                  55          60                  65
 K   P   G   K   A   P   K   L   L   I   Y   K   A   F                           N
AAA CCA GGG AAA GCC CCT AAA CTC CTG ATC TAT AAG GCG TTT ... ... ... ... ... ... ... AAT

---------------------------------------------    F   R   3   -   I   M   G   T ----

            70                  75                  80                  85
 L   E   S   G   V   P       S   R   F   R   G   S   G           S   G   T   E   F   T
TTA GAA AGT GGG GTC CCA ... TCA AGG TTC AGA GGC AGT GGC ... ... TCT GGG ACA GAA TTC ACT

-------------------------------------------------------------> ____________CDR3 - IMGT
    90                  95                  100                 105                 110
 L   T   I   S   S   L   Q   P   D   D   S   A   T   Y   Y   C   Q   Q   Y   S   S   Y
CTC ACC ATC AGC AGC CTG CAG CCT GAT GAT TCT GCA ACT TAT TAC TGC CAG CAG TAT AGT AGT TAC

_____________
                115                 120                 125                 130
 P   L   T   F   G   G   G   T   K   V   D   I   K   R   T   V   A   A   P   S   V   F
CCC CTC ACT TTC GGC GGA GGG ACC AAG GTG GAC ATT AAA CGA ACT GTG GCT GCA CCA TCT GTC TTC
```

FIG. 57 Translation of CB2i-E12 Heavy Chain:

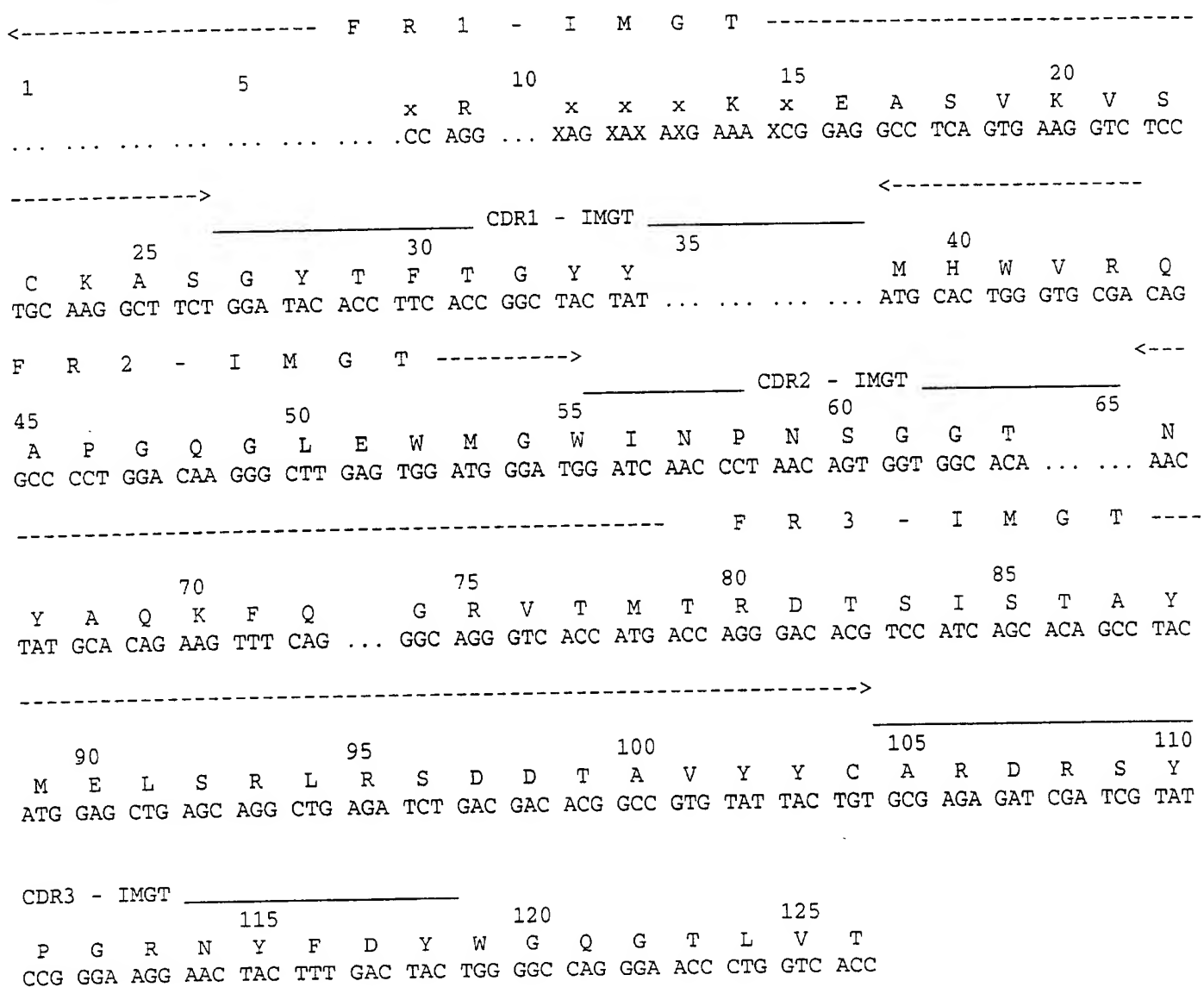


FIG. 58 Translation of CB2i-E12 kappa chain:

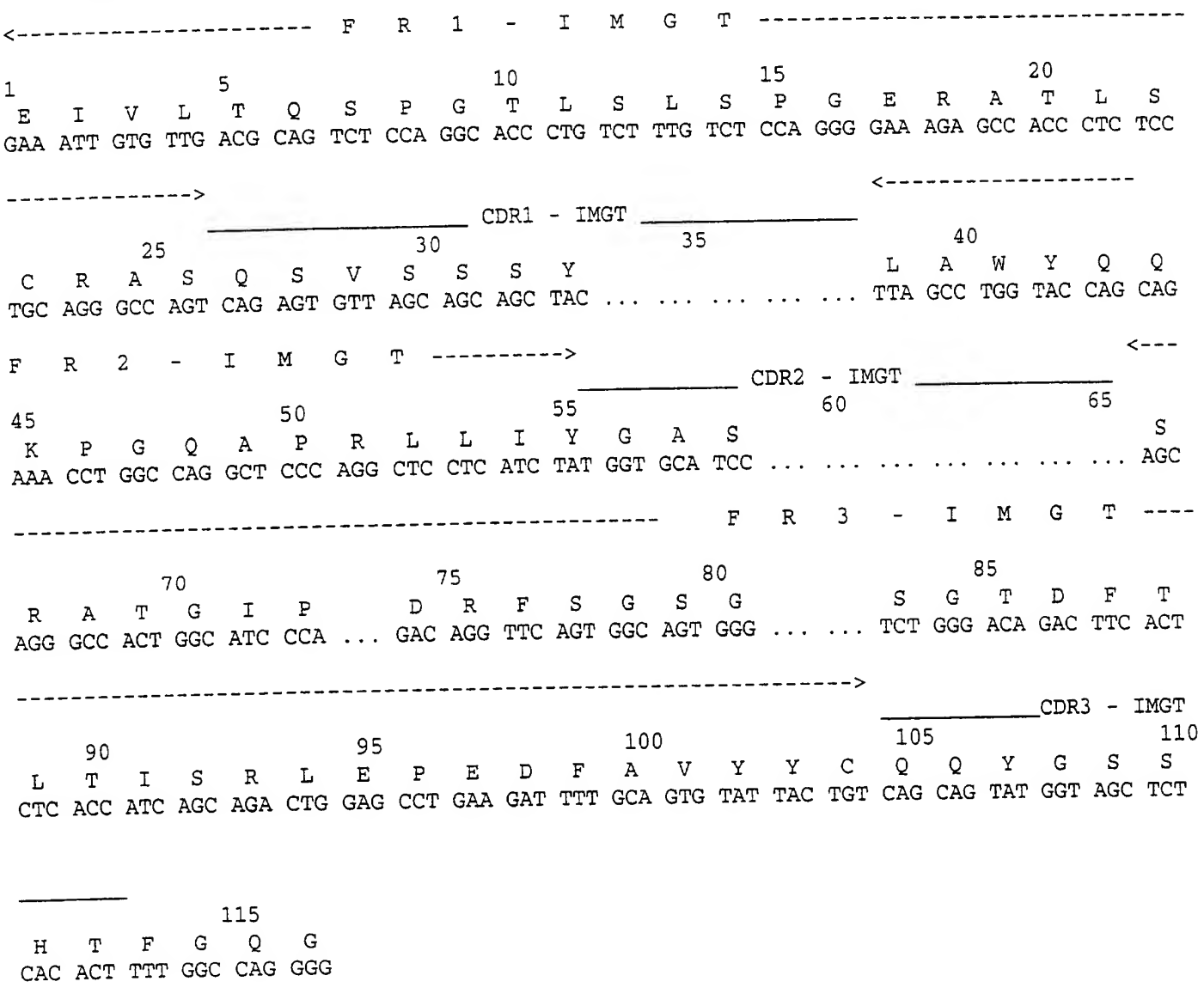


FIG. 59 Translation of CB2i-E7 Heavy Chain:

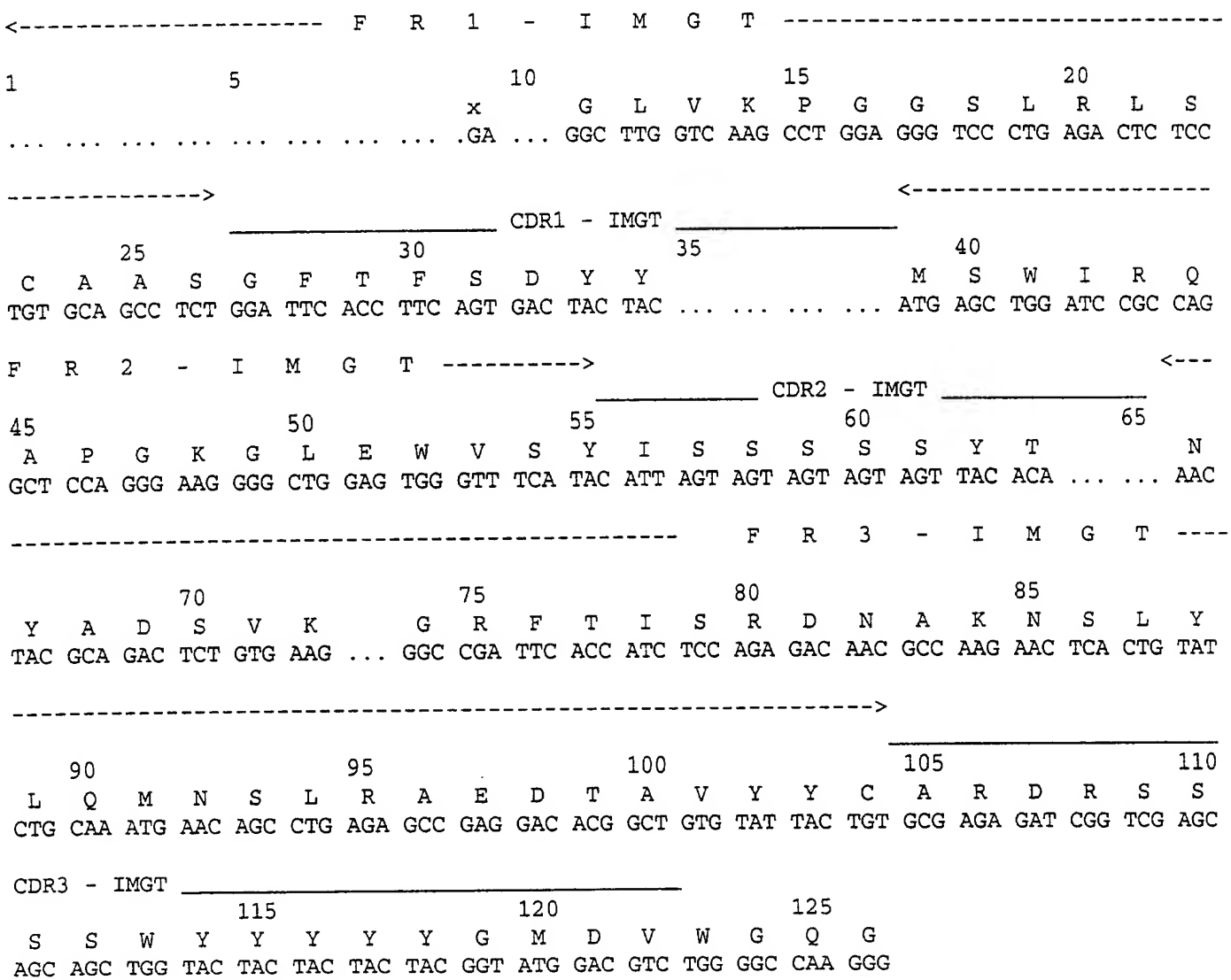


FIG. 60 Translation of CB2i-E7 kappa Chain:

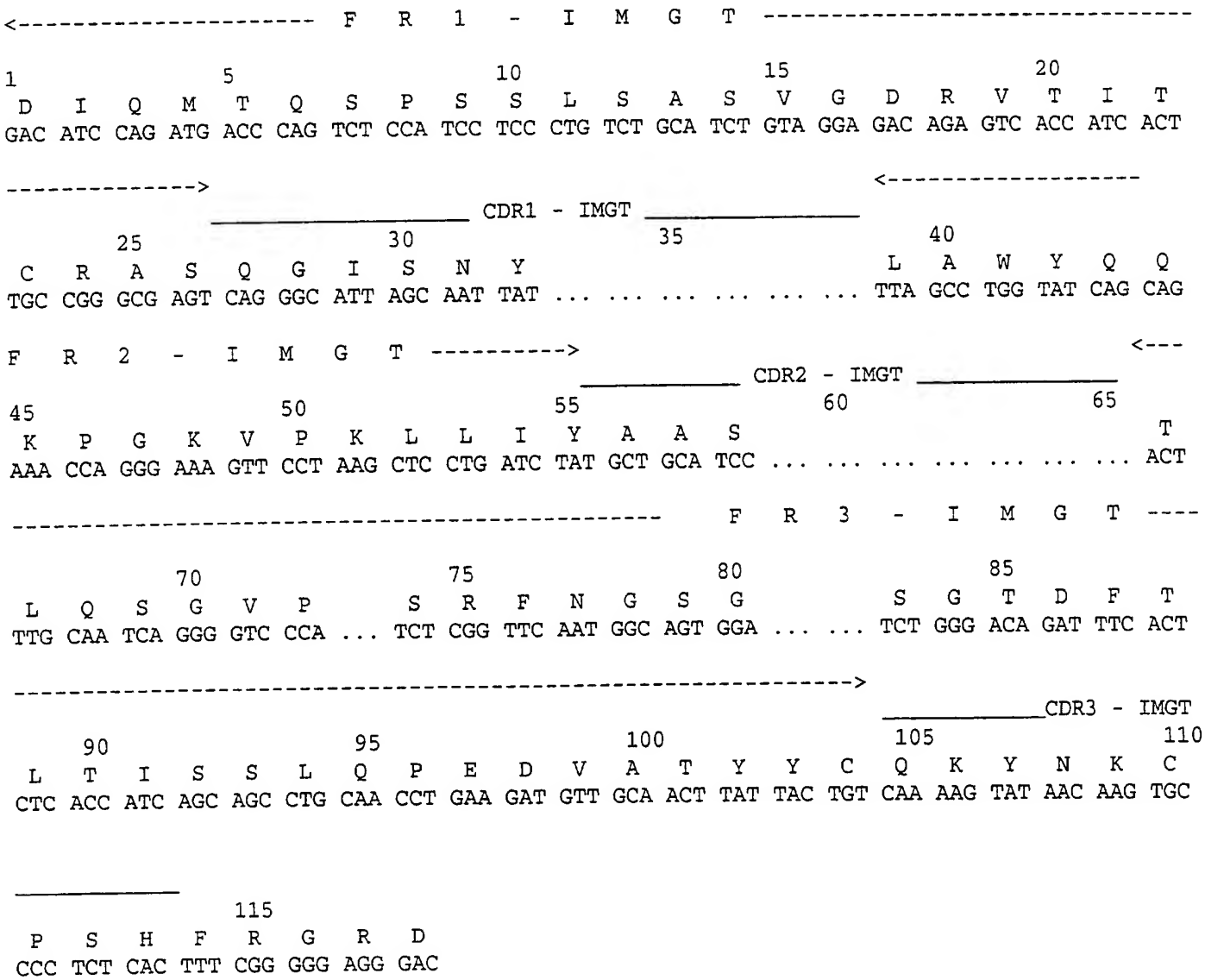


FIG. 61

Translation Of MSI 19-E5 Light Chain

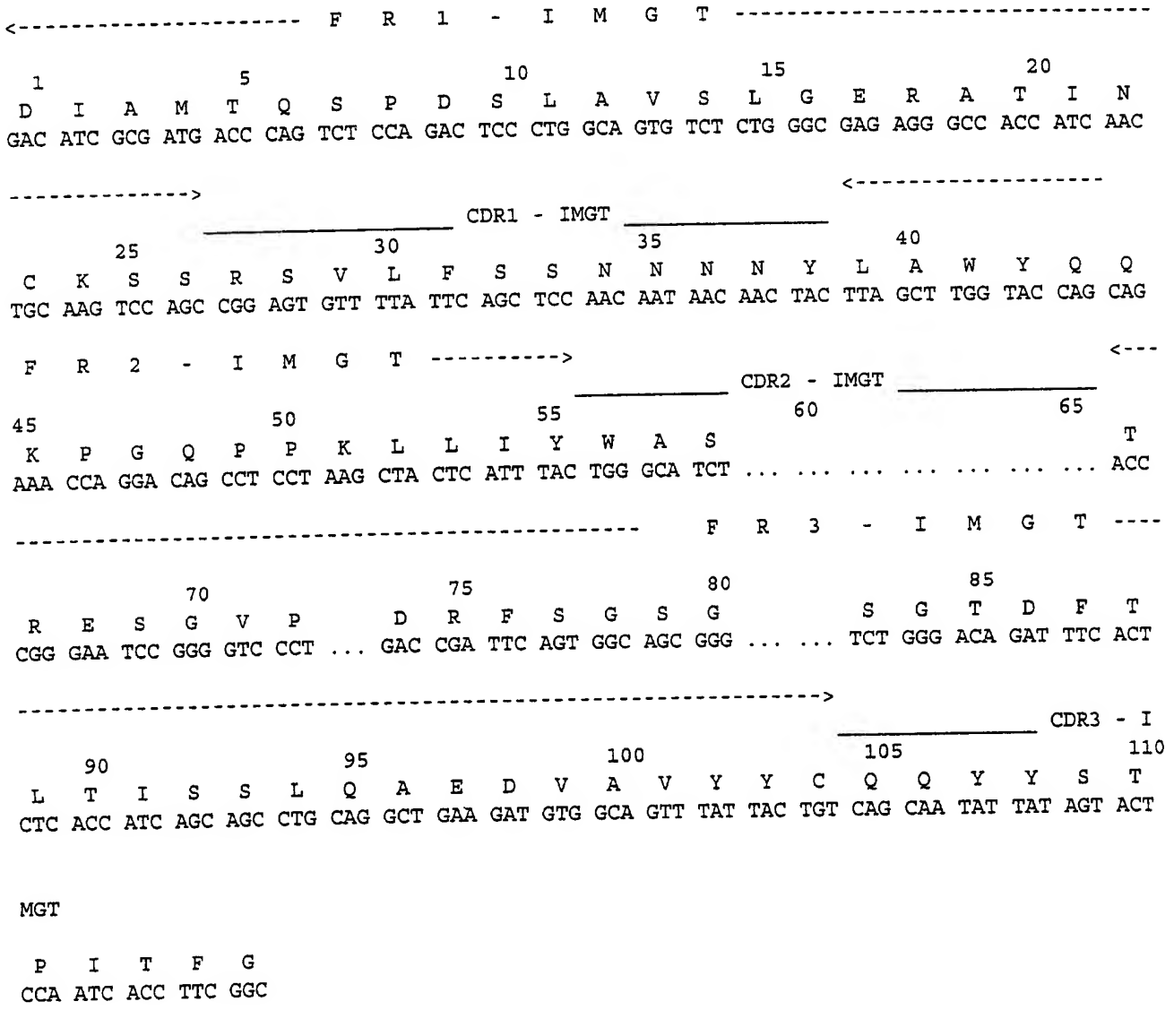


FIG. 62

Translation of 04 kappa chain 2:

```
<---------------------- F   R   1   -   I   M   G   T ------------------------------

1               5                   10                  15                  20
 D   I   V   M   T   Q   S   H   K   F   M   S   T   S   V   G   D   R   V   S   I   T
GAC ATC GTA ATG ACG CAG TCT CAC AAA TTC ATG TCC ACT TCA GTA GGA GAC AGG GTC AGC ATC ACC

--------------->                                                  <-------------------
                 _____________________ CDR1 - IMGT _________________
                   25                  30                  35                  40
 C   K   A   S   Q   D   V   S   T   A                               V   A   W   Y   Q   Q
TGC AAG GCC AGT CAG GAT GTG AGT ACT GCT ... ... ... ... ... ... GTA GCC TGG TAT CAA CAG

F   R   2   -   I   M   G   T ---------->                                              <---
                                          ____________ CDR2 - IMGT _______________
          45                  50                  55                  60
65
 K   P   G   Q   S   P   K   L   L   I   Y   S   A   S                                   Y
AAA CCA GGA CAA TCT CCT AAA CTA CTG ATT TAC TCG GCA TCC ... ... ... ... ... ... ... TAC

-------------------------------------------------    F   R   3   -   I   M   G   T ----

            70                  75                  80                  85
 R   Y   T   G   V   P       D   R   F   T   G   S   G           S   G   T   D   F   T
CGG TAC ACT GGA GTC CCT ... GAT CGC TTC ACT GGC AGT GGA ... ... TCT GGG ACG GAT TTC ACT

------------------------------------------------------------------>
                                                          _____________CDR3 - IMGT
    90                  95                  100                 105                 110
 F   T   I   S   S   V   Q   A   E   D   L   A   V   Y   Y   C   Q   Q   H   Y   T   T
TTC ACC ATC AGC AGT GTG CAG GCT GAA GAC CTG GCA GTT TAT TAC TGT CAG CAA CAT TAT ACT ACT


_____________
                  115
 P   L   T   F   G   A   G
CCG CTC ACG TTC GGT GCT GGG
```

FIG. 63A

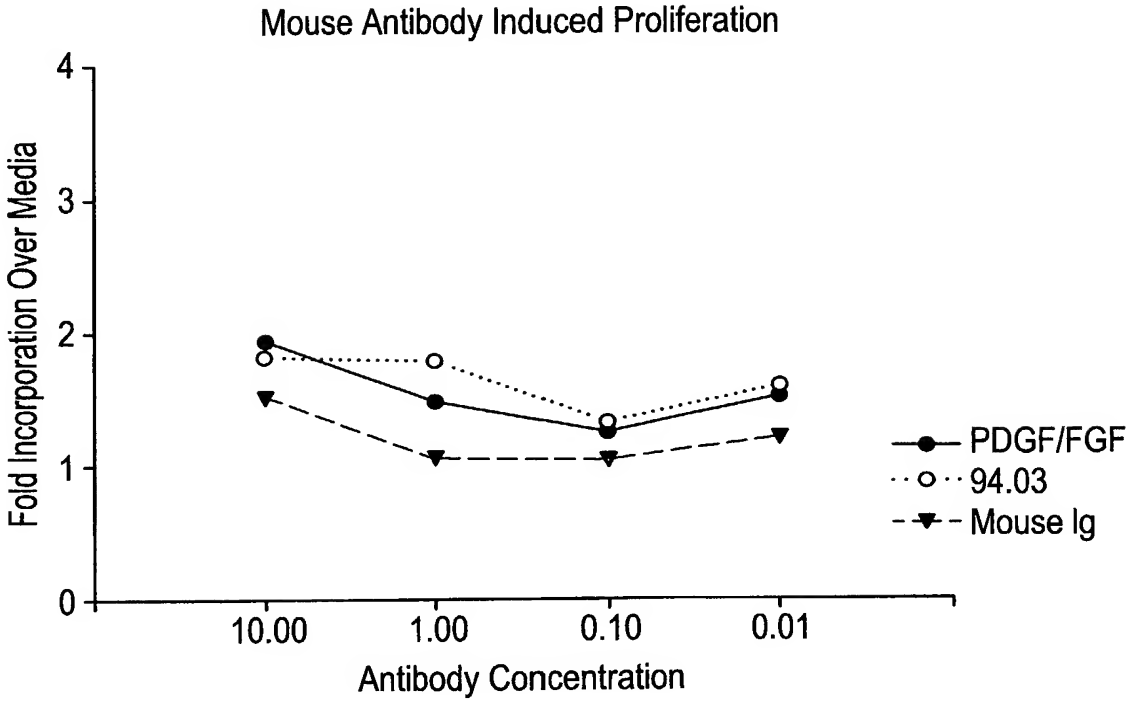


FIG. 63B

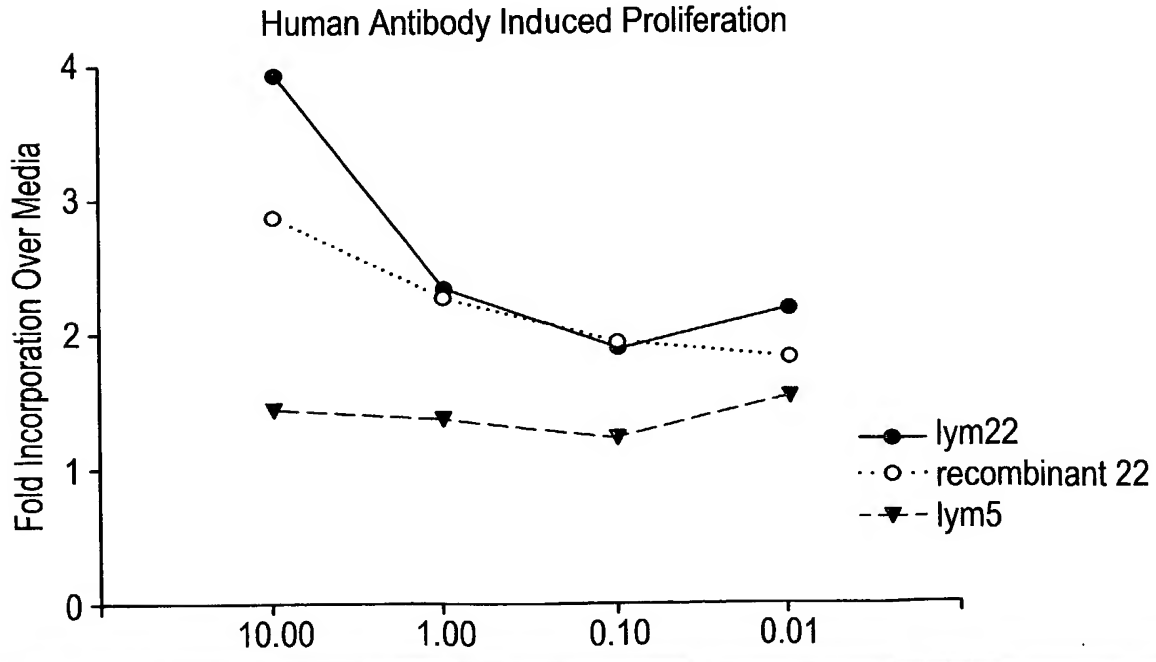


FIG. 64

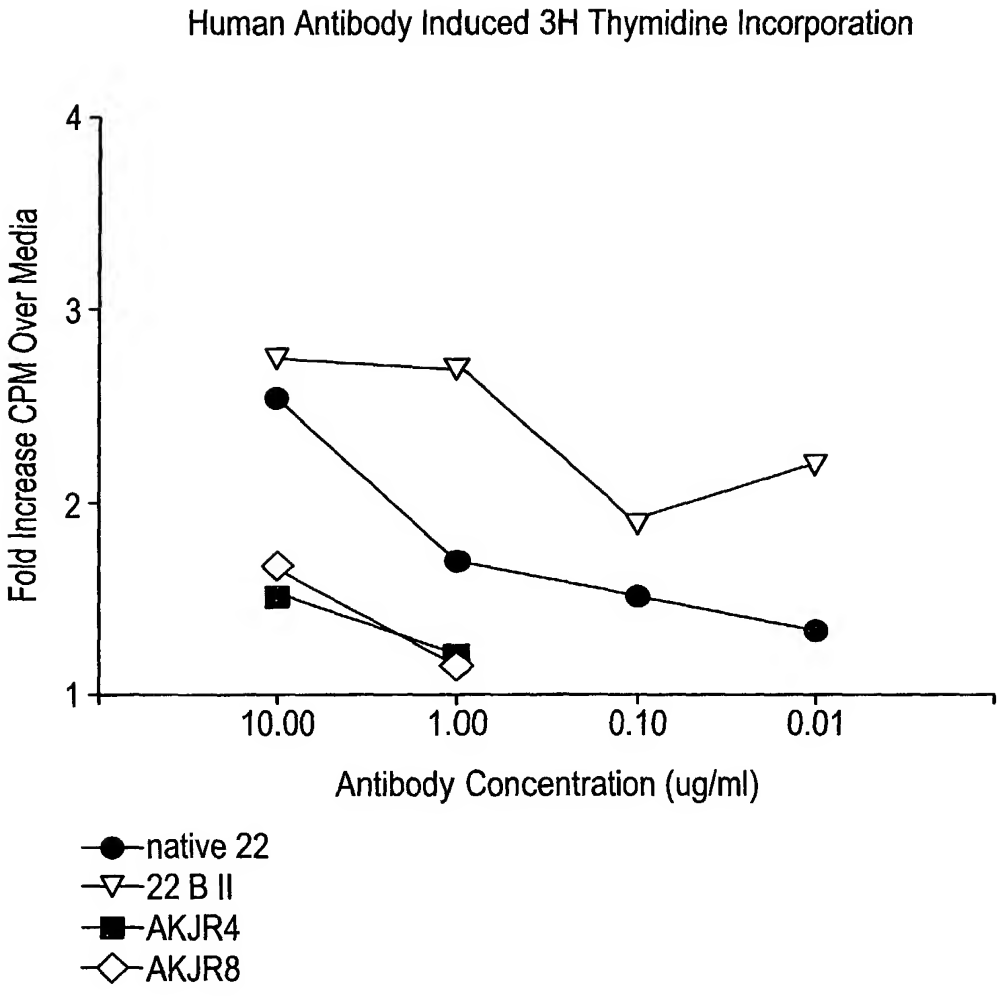


FIG. 65

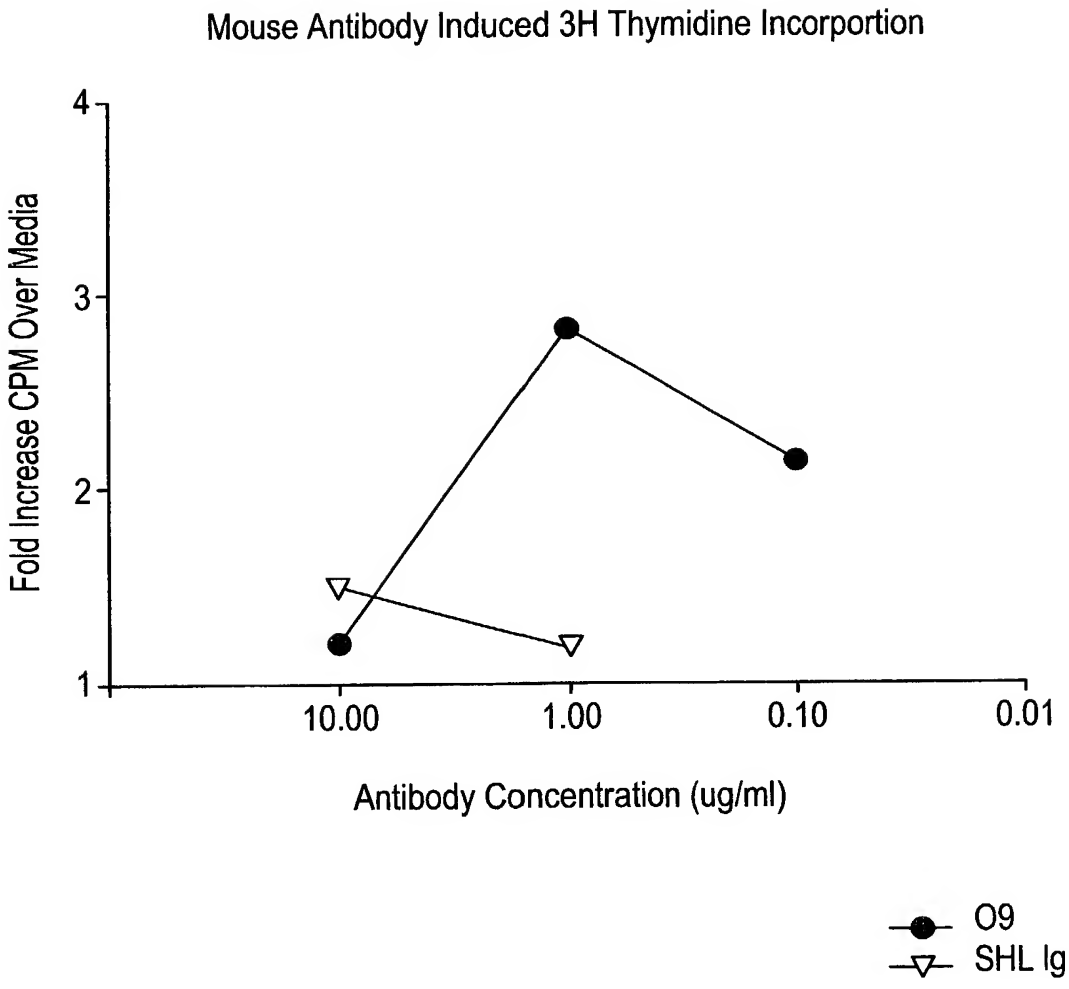
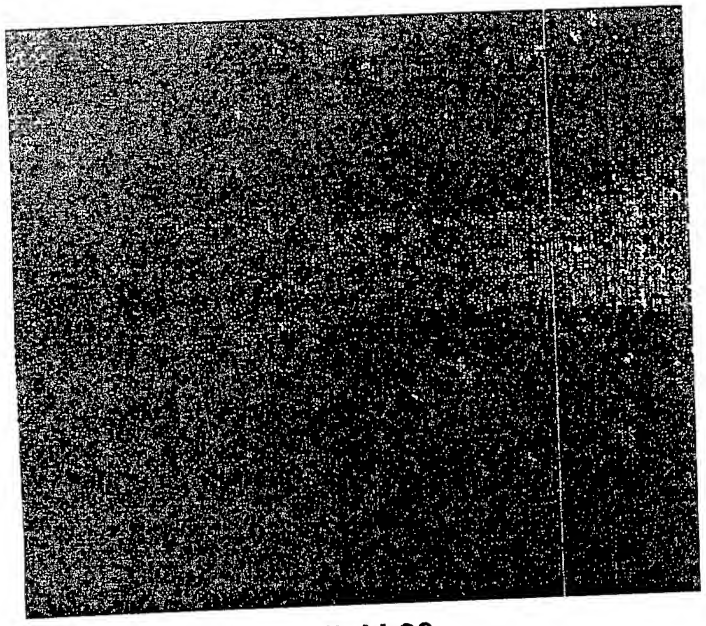
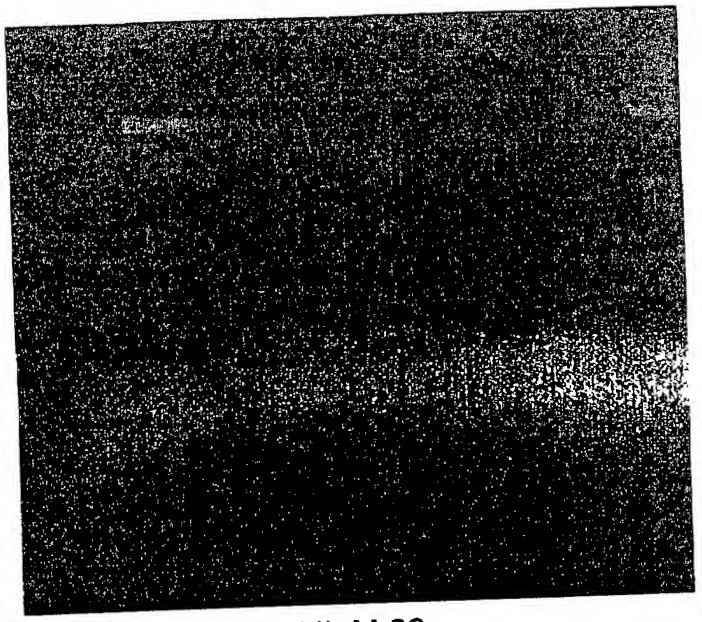


FIG. 66A



sHIgM 22

FIG. 66B



rHIgM 22

FIG. 68

TRANSLATION OF 01 KAPPA CHAIN

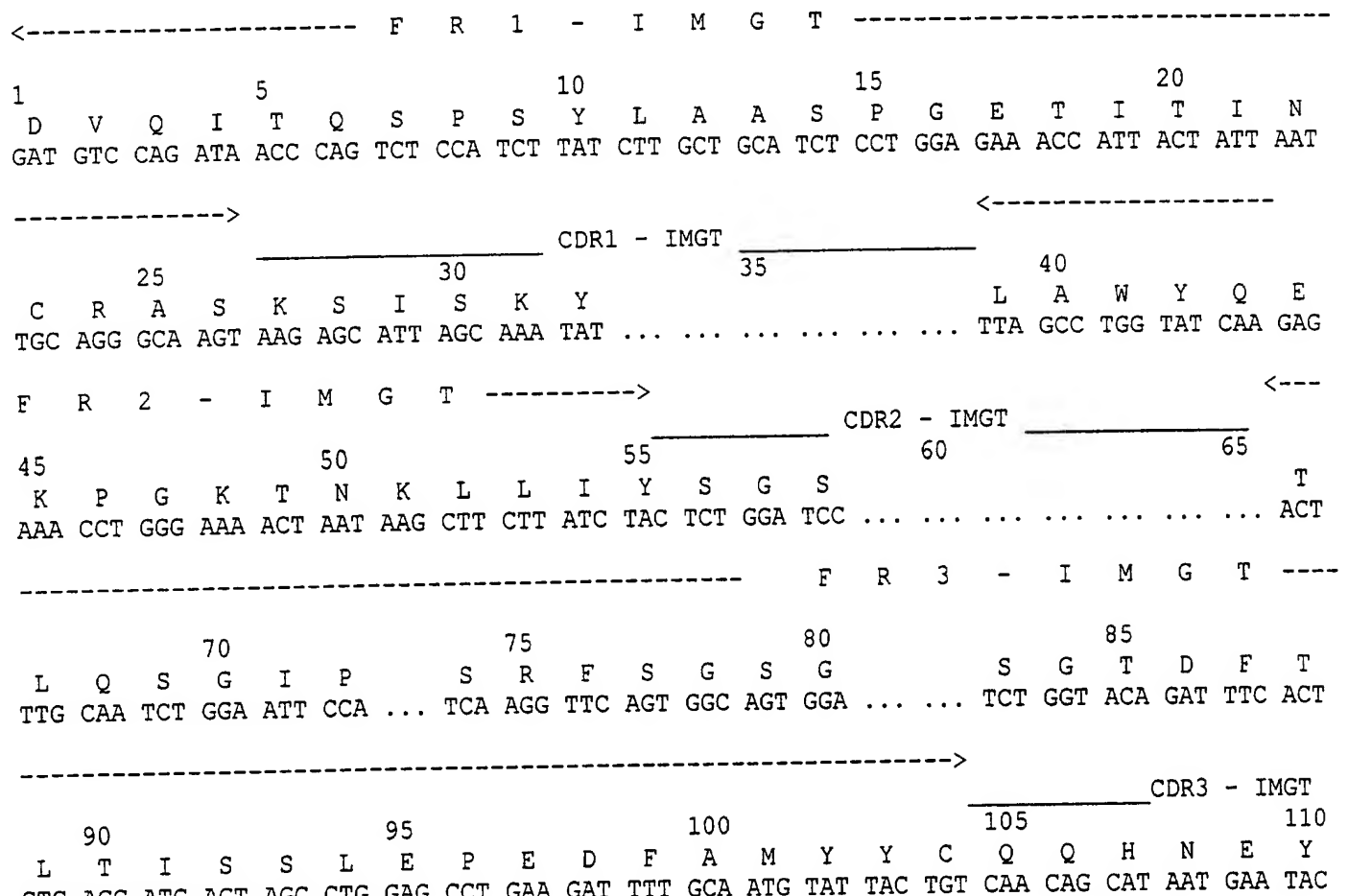


FIG. 69

TRANSLATION OF HNK-1 KAPPA CHAIN

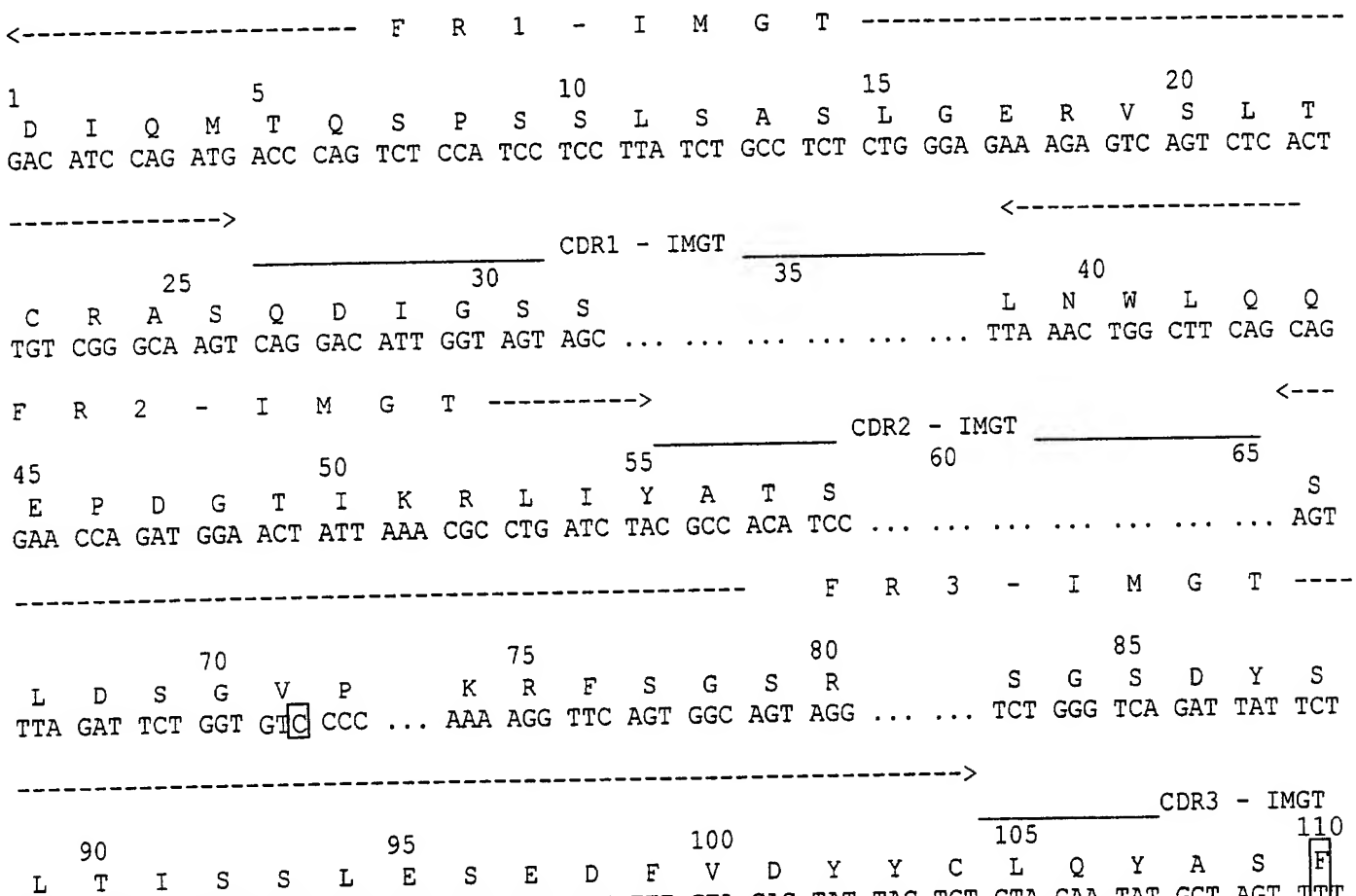


FIG. 70

TRANSLATION OF A2B5 KAPPA CHAIN

```
←----------------------------------------------F  R  1  -  I  M  G  T --------
1              5              10                15                20
 Q  I  V  L  T  Q  S  P  A  I  M  S  A  S  P  G  E  K  V  T  I  S
CAA ATT GTT CTC ACC CAG TCT CCA GCA ATC ATG TCT GCA TCT CCA GGG GAG AAG GTC ACC ATA TCC

----------->                                                  <------------------

                    _____________________ CDR1 - IMGT _____________
        25                  30                  35                  40
 C  S  A  S  S  S  V  S  Y                                    M  Y  W  Y  Q  Q
TGC AGT GCC AGC TCA AGT GTA AGT TAC ... ... ... ... ... ... ... ATG TAC TGG TAC CAG CAG

F  R  2  -  I  M  G  T ---------->                                          <---

                                                  _____________ CDR2 - IMGT _____________
45                  50                  55                  60                  65
 K  P  G  S  S  P  K  P  W  I  Y  R  T  S                                          N
AAG CCA GGA TCC TCC CCC AAA CCC TGG ATT TAT CGC ACA TCC ... ... ... ... ... ... ... AAC

-----------------------------------------------  F  R  3  -  I  M  G  T ----

            70                  75                  80                  85
 L  A  S  G  V  P        A  R  F  S  G  S  G              S  G  T  S  Y  S
CTG GCT TCT GGA GTC CCT ... GCT CGC TTC AGT GGC AGT GGG ... ... TCT GGG ACC TCT TAC TCT

-------------------------------------------------------------->

                                                              _____________CDR3 - IMGT
    90                  95                  100                 105                 110
 L  T  I  S  S  M  E  A  E  D  A  A  T  Y  Y  C  Q  Q  Y  H  S  Y
CTC ACA ATC AGC AGC ATG GAG GCT GAA GAT GCT GCC ACT TAT TAC TGC CAG CAG TAT CAT AGT TAC

_____________
            115                 120
 P  L  T  F  G  A  G  T  K  L  E  L  K  R
CCA CTC ACG TTC GGT GCT GGG ACC AAG CTG GAG CTG AAA CGG
```

FIG. 71

LYM 46 Heavy Chain Sequence:

FR 1

E V Q L V E S G G G L V Q P G
GAG GTG CAG CTG GTG GAG TCT GGG GGA GGC TTG GTC CAG CCT GGG

CDR1

G S L R L S C A A S G F T F S
GGG TCC CTG AGA CTC TCC TGT GCA GCC TCT GGA TTC ACC TTT AGT

FR 2

S Y W M T W V R Q A P G K G L
AGC TAT TGG ATG ACC TGG GTC CGC CAG GCT CCA GGG AAG GGG CTG

CDR2

E W V A N I K K D G S E K S Y
GAG TGG GTG GCC AAC ATA AAG AAA GAT GGA AGT GAG AAA TCC TAT

FR3

V D S V K G R F T T S R D N A
GTG GAC TCT GTG AAG GGC CGA TTC ACC ACC TCC AGA GAC AAC GCC

K N S L Y L Q M N S L R A E D
AAG AAC TCA CTG TAT CTG CAA ATG AAC AGC CTG AGA GCC GAG GAC

CDR3

T A V Y Y C A R P N C G G D C
ACG GCT GTG TAT TAC TGT GCG AGA CCC AAT TGT GGT GGT GAC TGC

Y L P W Y F D L W G R G T L V
TAT TTA CCA TGG TAC TTC GAT CTC TGG GGC CGT GGC ACC CTG GTC

T V S S
ACT GTC TCC TCA

FIG. 72

```
,YM 46 KAPPA LIGHT CHAIN SEQUENCE:
:---------------------- F   R   1   -   I   M   G   T  ---------------------------------

                    5                   10                  15                  20
D   I   V   M   T   Q   S   P   D   S   L   A   V   S   L   G   E   R   A   T   I   N
:AC ATC GTG ATG ACC CAG TCT CCA GAC TCC CTG GCT GTG TCT CTG GGC GAG AGG GCC ACC ATC AAC

-------------->                                                  <--------------------
                  ______________ CDR1 - IMGT _______________
        25                  30                  35                  40
C   K   S   S   Q   S   V   L   Y   S   S   N   N   K   N   Y   L   A   W   Y   Q   Q
'GC AAG TCC AGC CAG AGT GTT TTA TAC AGC TCC AAC AAT AAG AAC TAC TTA GCT TGG TAC CAG CAG

'   R   2   -   I   M   G   T  ---------->                                        <---
                                         __________ CDR2 - IMGT ______________
,5                  50                  55                  60                  65
K   P   G   Q   P   P   K   L   L   I   Y   W   A   S                                 T
,AA CCA GGA CAG CCT CCT AAA CTA CTC ATT TAC TGG GCA TCT ... ... ... ... ... ... ... ACC

------------------------------------------------------ F   R   3   -   I   M   G   T  ----

                70                  75                  80                  85
R   E   S   G   V   P       D   R   F   S   G   S   G           S   G   T   D   F   T
:GG GAA TCC GGG GTC CCT ... GAC CGA TTC AGT GGC AGC GGG ... ... TCT GGG ACA GAT TTC ACT

------------------------------------------------------------------------------>
                                                                  ___________ CDR3 - IMGT
    90                  95                  100                 105                 110
L   T   I   S   S   L   Q   A   E   D   V   A   V   Y   Y   C   Q   Q   Y   Y   N   T
:TC ACC ATC AGC AGC CTG CAG GCT GAA GAT GTG GCA GTT TAT TAC TGT CAG CAA TAT TAT AAT ACT

___________
            115                 120                 125                 130
P   Q   A   F   G   Q   G   T   K   V   E   I   K   R   T   V   A   A   P   S   V   F
:CT CAG GCG TTC GGC CAA GGG ACC AAG GTG GAA ATC AAA CGA ACT GTG GCT GCA CCA TCT GTC TTC
```

FIG. 73

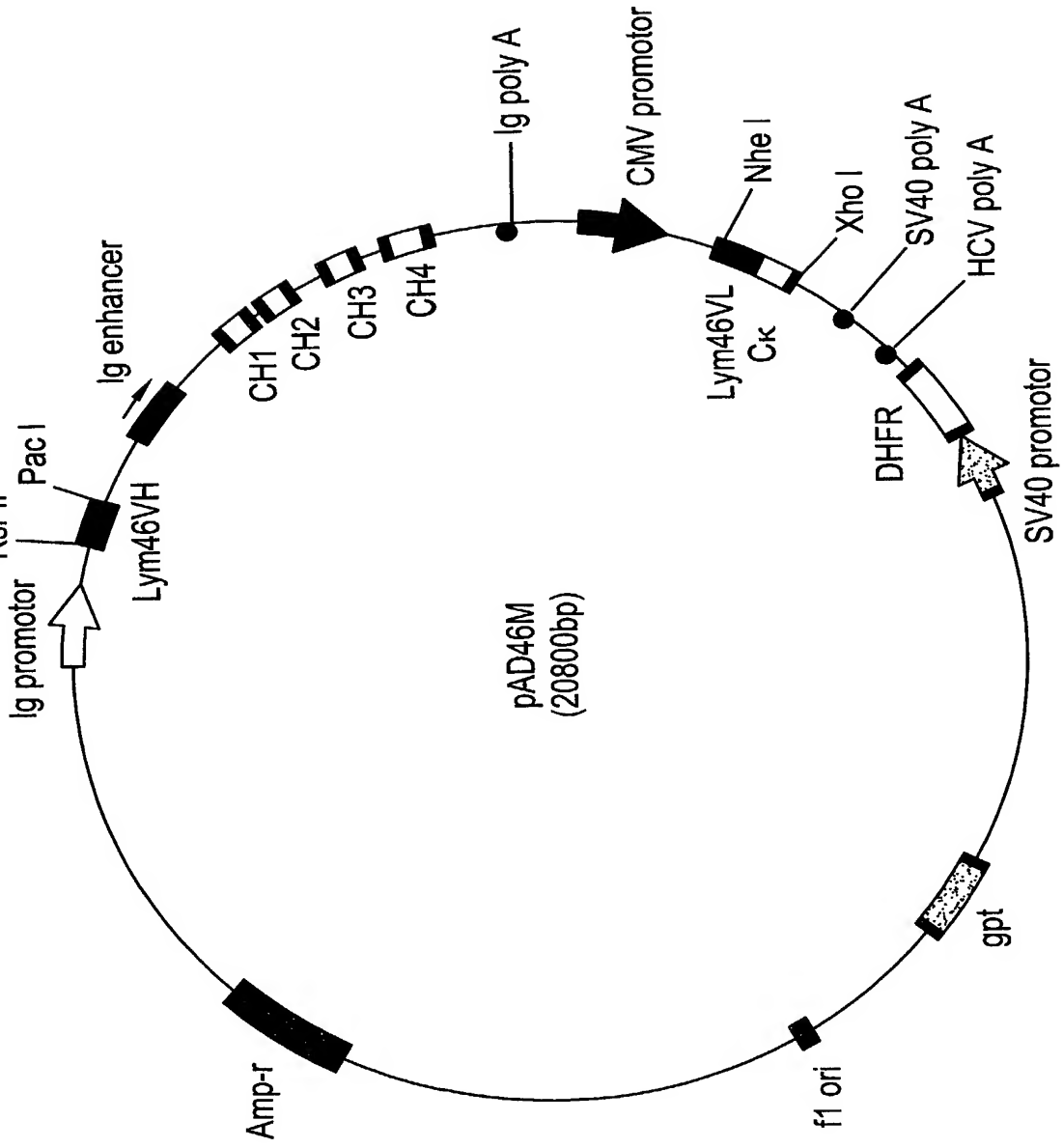


FIG. 74

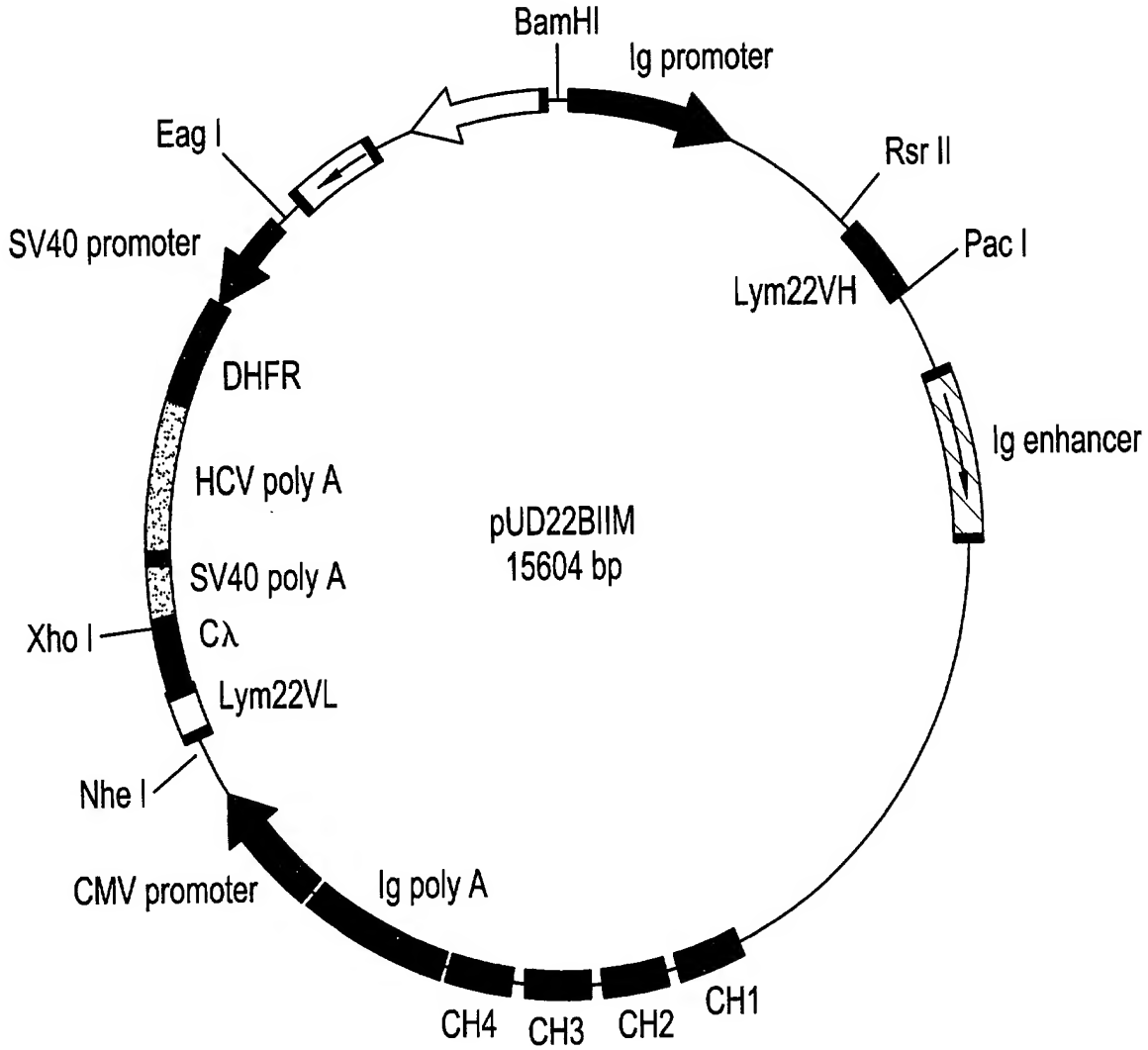


FIG. 75

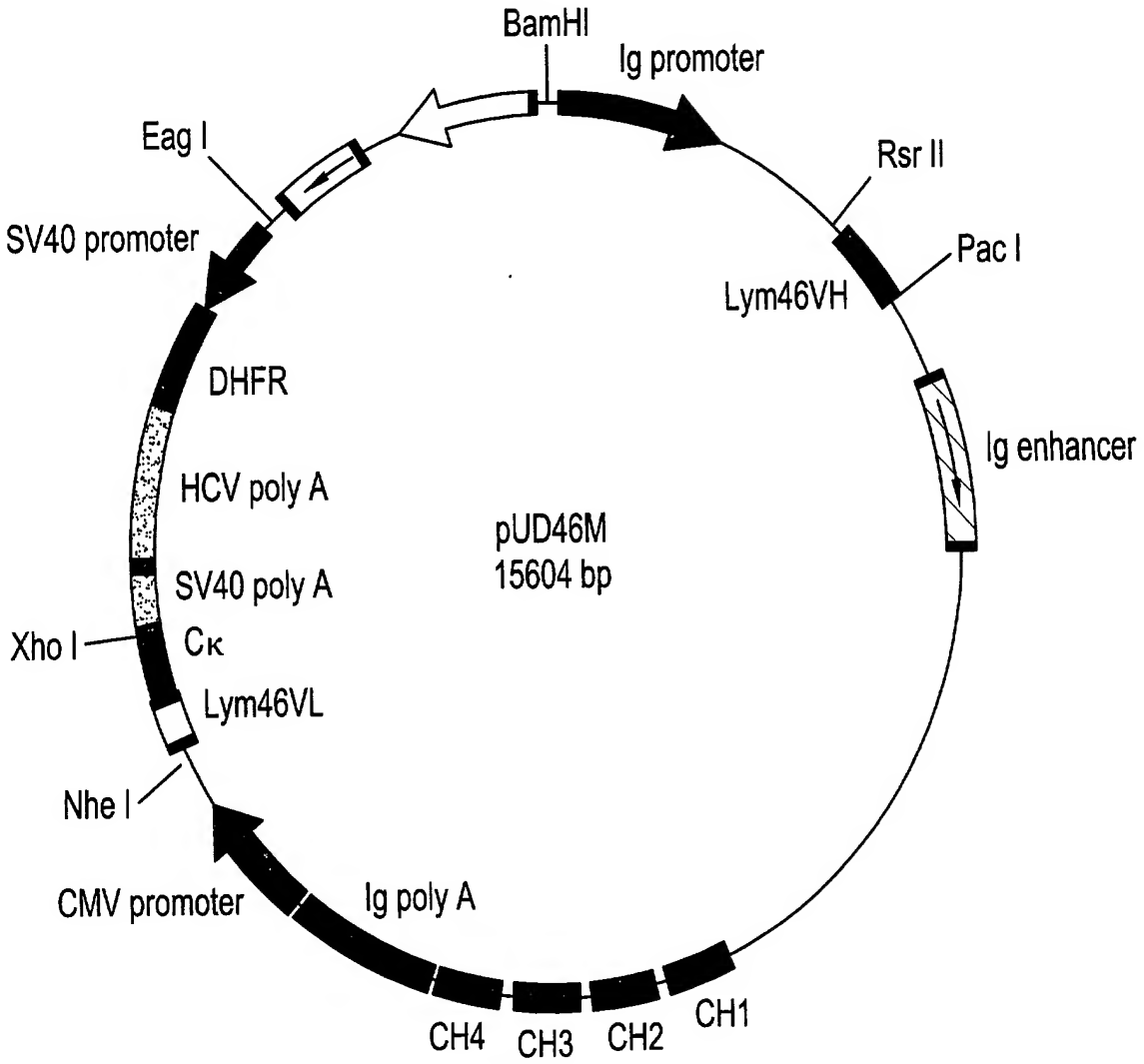


FIG. 76

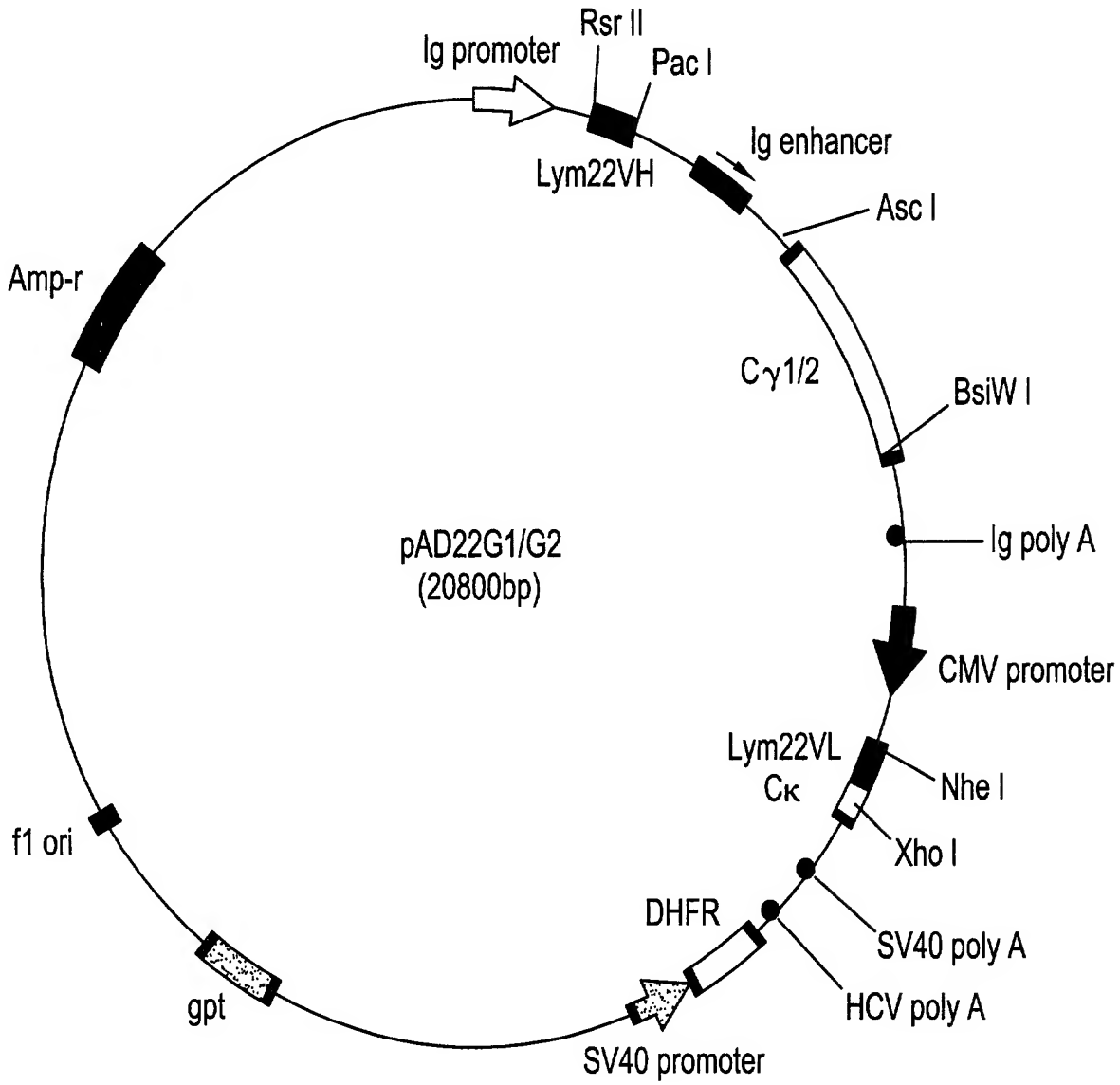


FIG. 77

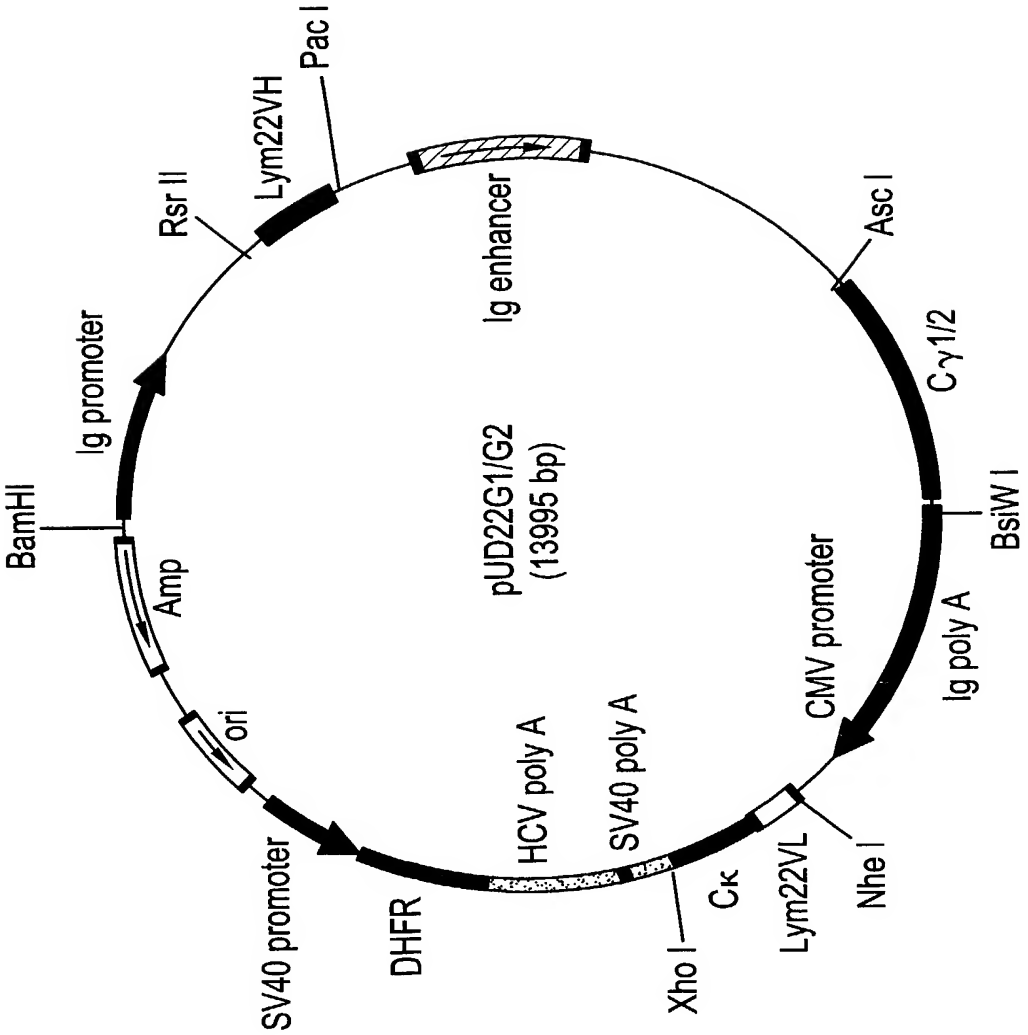


FIG. 78

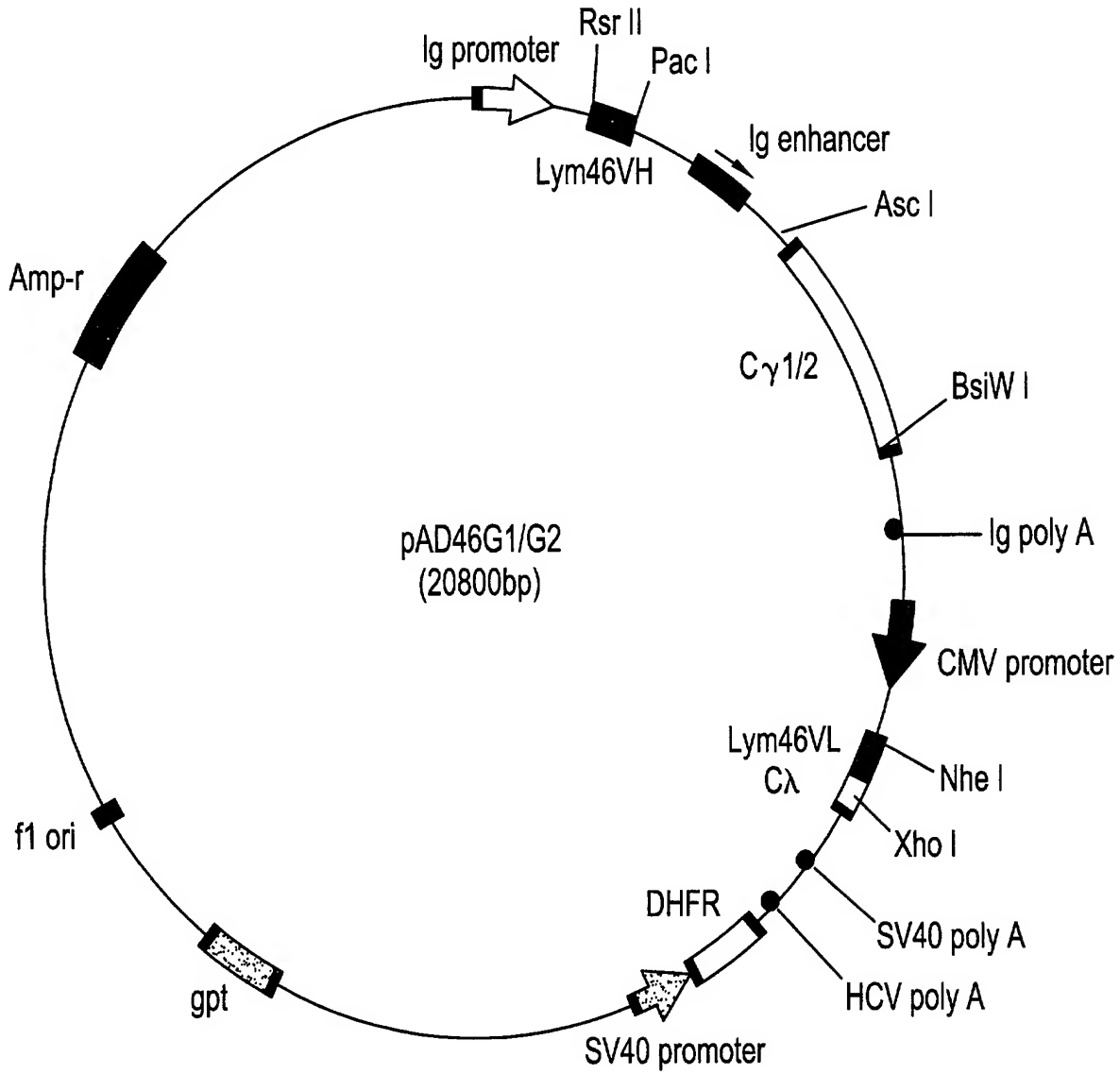


FIG. 79

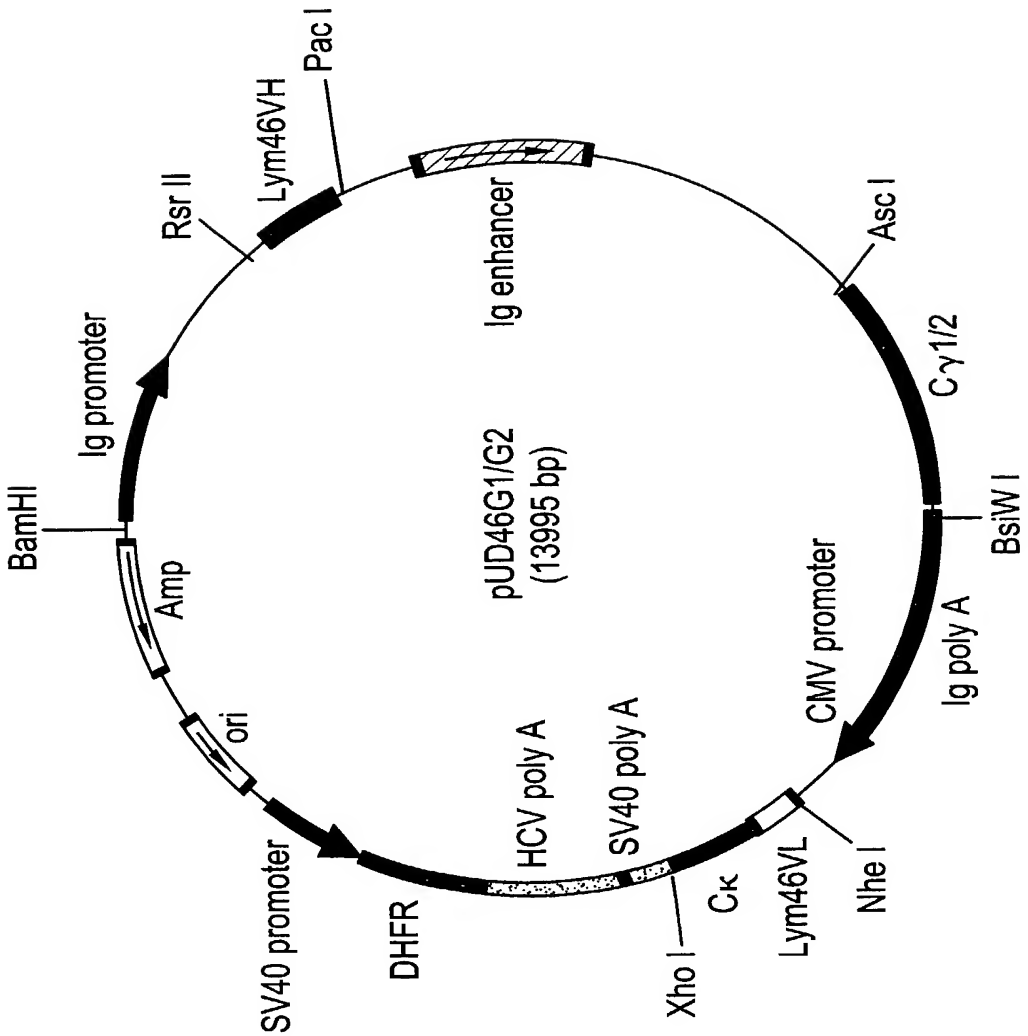


FIG. 80A

TMEV Infected SJL Mice
Treated at 21 Days Post Infection

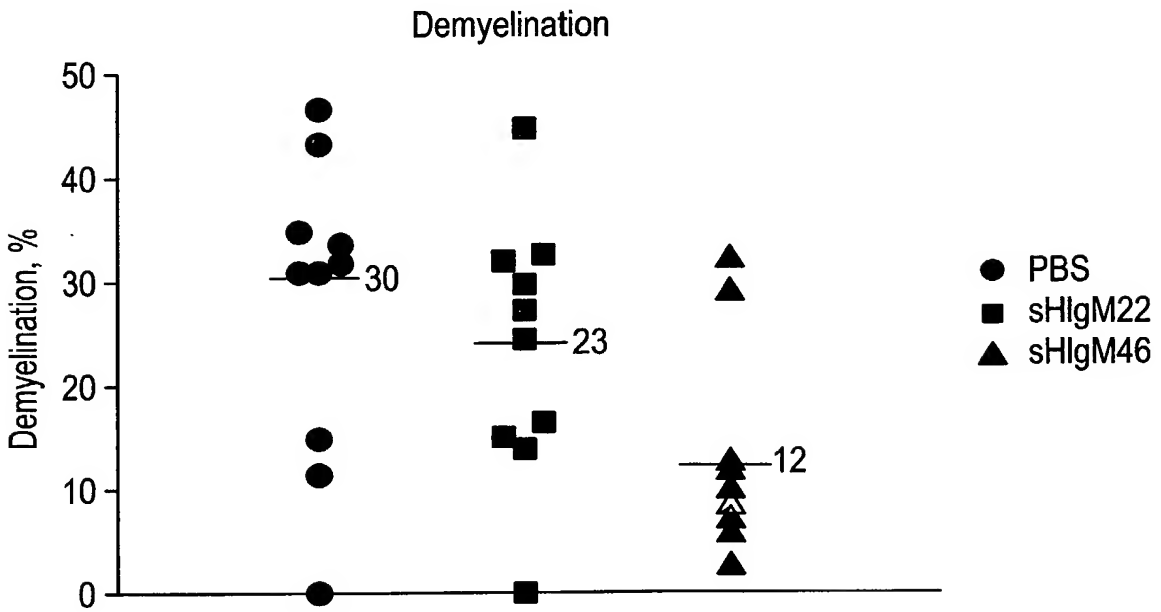


FIG. 80B

TMEV Infected SJL Mice
Treated at 21 Days Post Infection

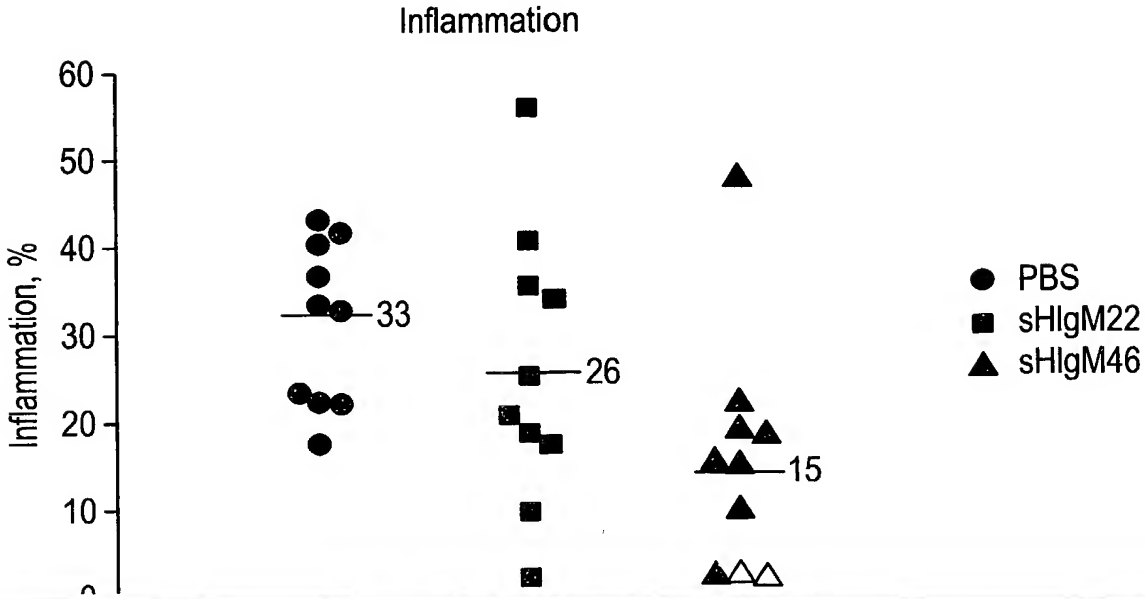


FIG. 81

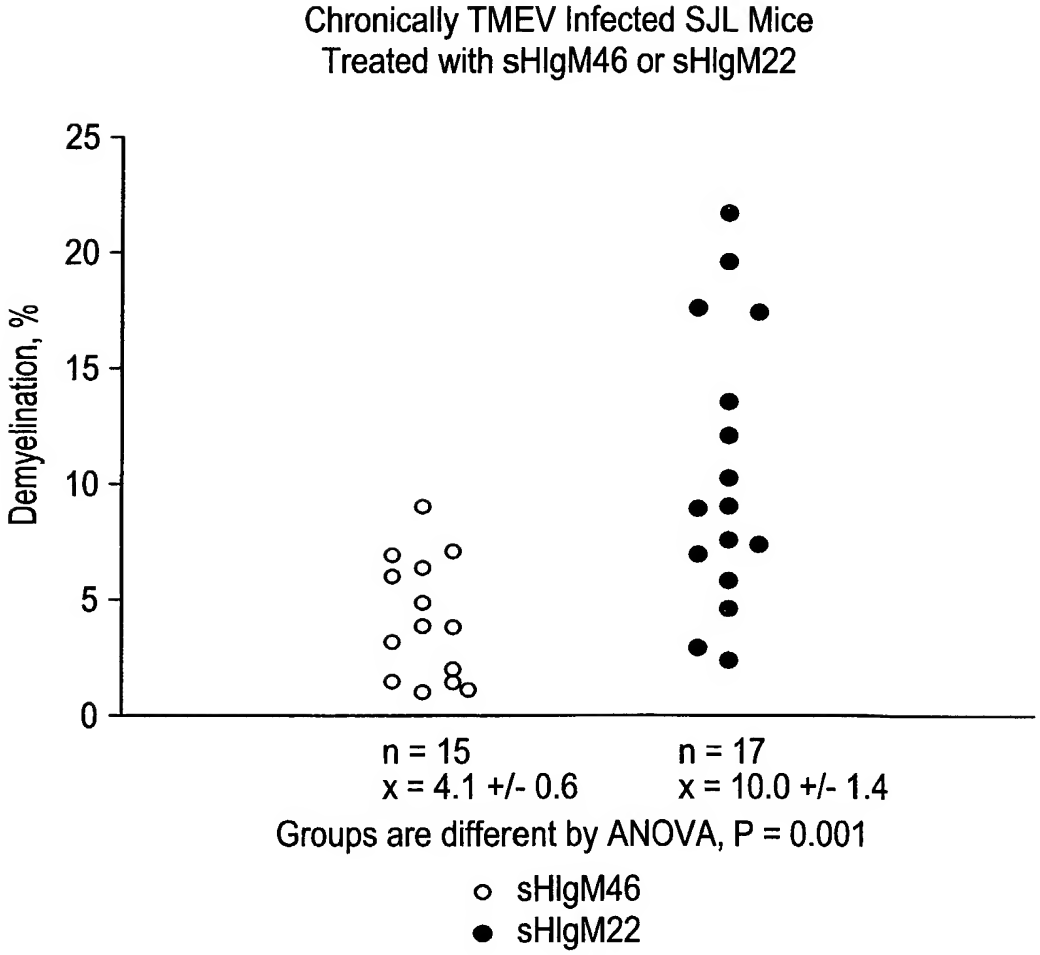
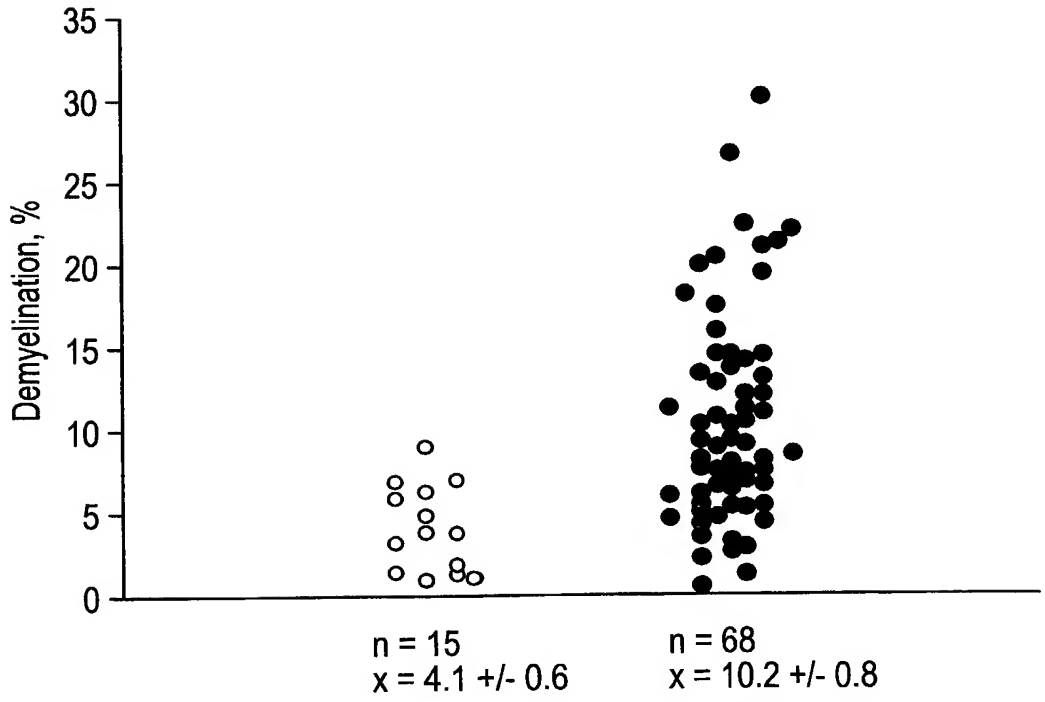


FIG. 82

Chronically TMEV Infected SJL Mice
Treated sHIgM46 vs All Other Antibodies



Groups are different by one way ANOVA, P = < 0.001

o sHIgM46
● other mAbs

FIG. 83

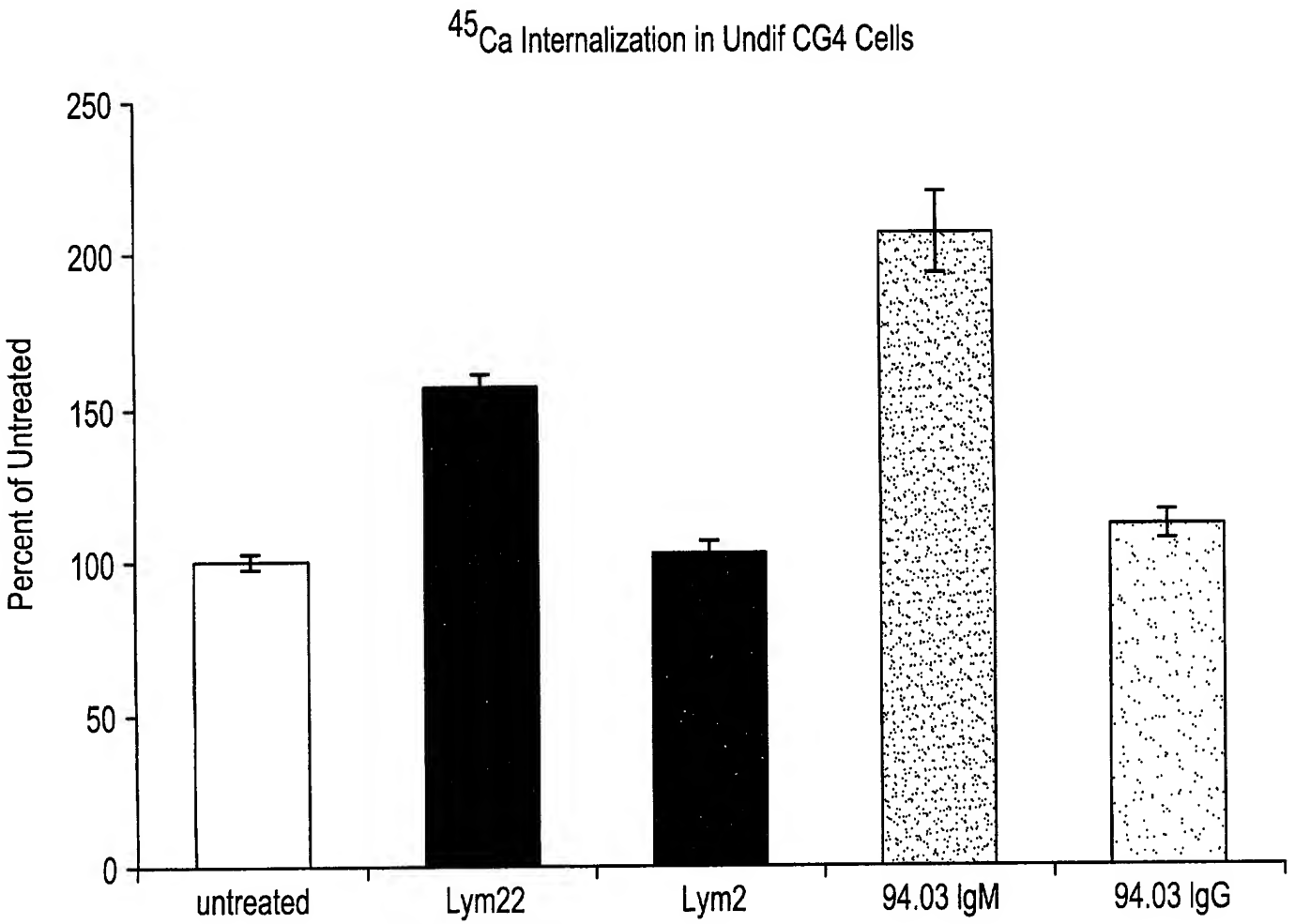


FIG. 84

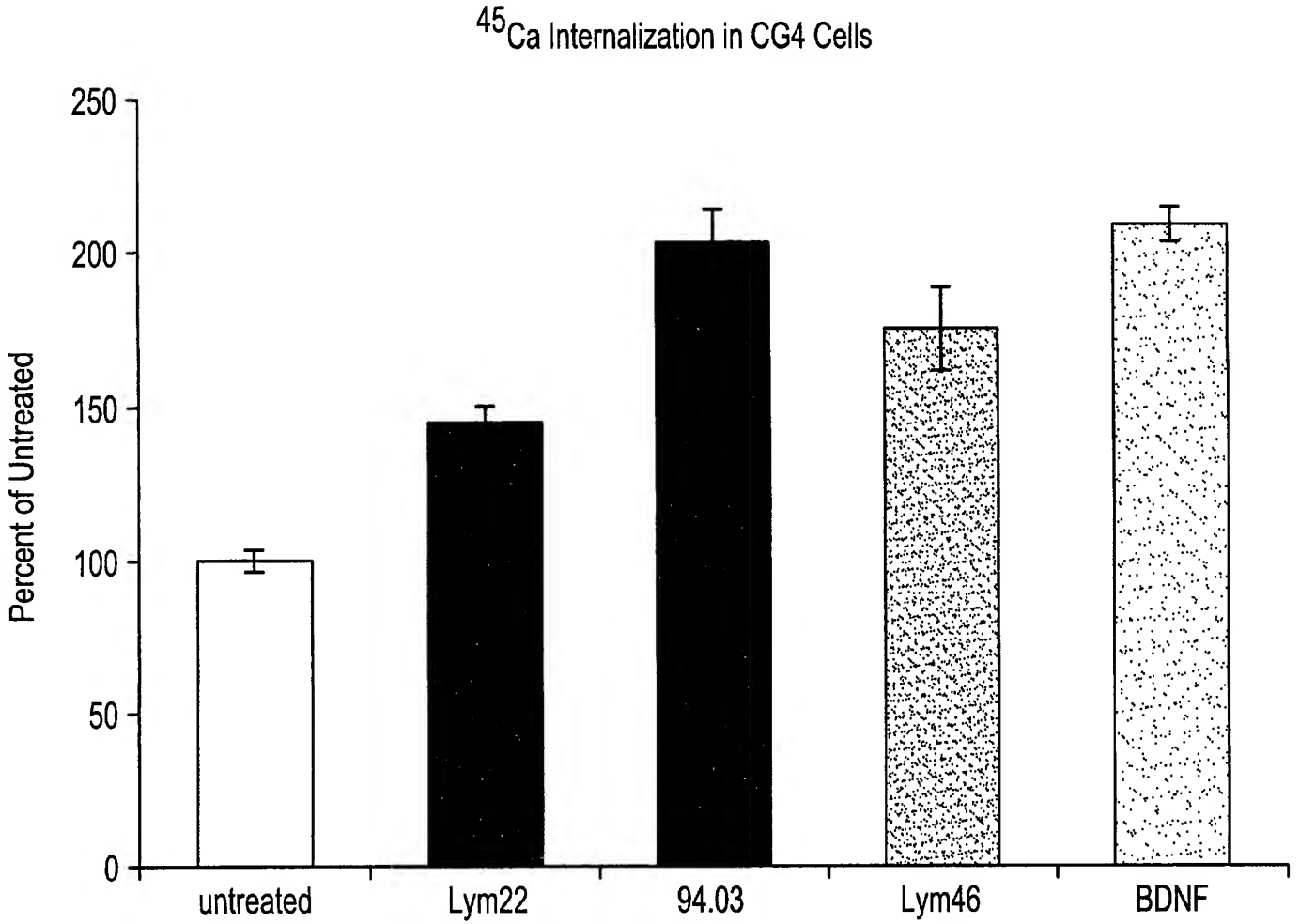


FIG. 85

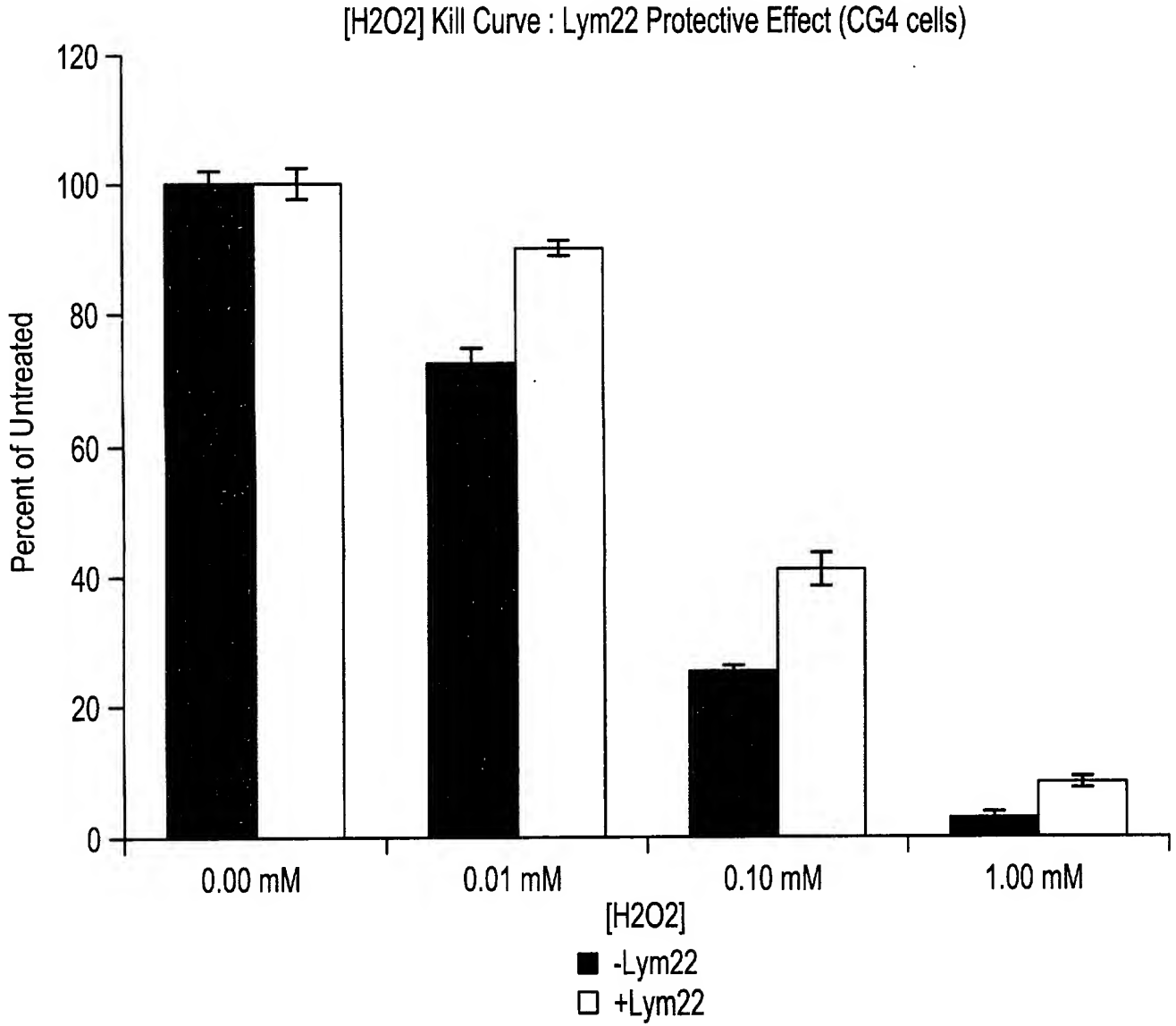


FIG. 86A

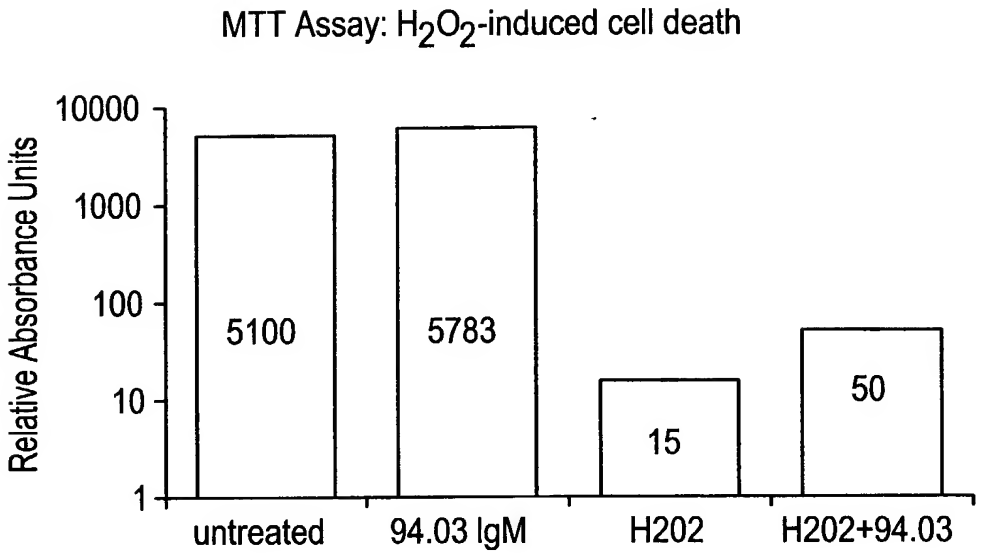


FIG. 86B